



STIC Search Report

EIC 2600

STIC Database Tracking Number: 111624

TO: Christopher Magee
Location: CPK2 3A42
Art Unit : 2653
Friday, January 09, 2004

Case Serial Number: 10/068450

From: Vamshi Kalakuntla
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PK2-3C03
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Search Notes

Dear Christopher Magee;

Attached please find the results of your search request 10/068450.

I used the search strategy I emailed to you to edit.

I searched the standard Dialog files, IEEE and the internet.

If you would like a re-focus please let me know.

Please feel free to contact me if you have questions or concerns. Thank you and have a great day.

Please take a moment and fill out the attached feedback form. Thank you.



Access DB# 111624

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: CHRISTOPHER MAGEE ^{USED TO BE BEACHAM} Examiner #: 78799 Date: 1/7/03
 Art Unit: 2653 Phone Number 301-605-4256 Serial Number: 10/0681450
 Mail Box and Bldg/Room Location: CPK2-3A42 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: INFORMATION RECORDING/REPRODUCTION APPARATUS
 Inventors (please provide full names): NOBUYUKI KASAMA; YOKO SHINOHARA; HIDEAKA MAEDA; YASUYUKI MITSUOKA; MANABU OUMI; KENJI KATO; TAKASHI NIWA
 Earliest Priority Filing Date: 2/7/2002

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

ATTACHED IS COPY OF ABSTRACT
DRAWINGS & CLAIMS
 CLASS 369/112.27 ; 385/30; 385/36; 369/112.01
369/112.09 ; 369/112.02-.03

KEYWORDS: NEAR FIELD LIGHT; OPTICAL WAVEGUIDE;
CORE; CLAD; minute aperture

STAFF USE ONLY

Searcher: Vamsi Kalakutla
 Searcher Phone #: 703 306 0254
 Searcher Location: CPK2 3C03
 Date Searcher Picked Up: 01/08/04
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Vendors and cost where applicable

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File 344:Chinese Patents Abs Aug 1985-2003/Nov
(c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Sep(Updated 040105)
(c) 2004 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2003/Dec W02
(c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20031225,UT=20031218
(c) 2003 WIPO/Univentio
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200402
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Set	Items	Description
S1	421	AU=(KASAMA N? OR KASAMA, N?)
S2	1323	AU=(SHINOHARA, Y? OR SHINOHARA Y?)
S3	5271	AU=(MAEDA H? OR MAEDA, H?)
S4	398	AU=(MITSUOKA, Y? OR MITSUOKA Y?)
S5	84	AU=(OUMI M? OR OUMI, M?)
S6	17916	AU=(KATO, K? OR KATO K?)
S7	3092	AU=(NIWA T? OR NIWA, T?)
S8	322	(S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7) AND IC=(G02B-006/- 26 OR G02B-006/42 OR G11B-007/00 OR G11B-007/135)
S9	119	(S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7) AND NEAR()FIELD()- (LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR SCAN? ? OR SCANN- ING)
S10	88	S8 AND S9
S11	299391	OPTIC?(N) (FIBER? ? OR FIBRE? ? OR WAVEGUID?) OR (CORE AND - CLAD)
S12	16	S10(15N)S11
S13	16	IDPAT S12 (sorted in duplicate/non-duplicate order)
S14	15	IDPAT S12 (primary/non-duplicate records only)
S15	8	S14 AND (CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR - CONCENTER? OR CONCENTRING OR CONCENTRE?) (10N) (LIGHT OR OPTIC?)
S16	26	(S9 OR S8) (10N)S11
S17	32	(S9 OR S8) (S)S11
S18	8	S17(10N) (CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR - CONCENTER? OR CONCENTRING OR CONCENTRE?) (10N) (LIGHT OR OPTIC?)
S19	17	S17(S) (MICROLENS? ? OR LENS? ?)
S20	12	(S18 OR S19) NOT S15

15/3,K/1 (Item 1 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01474840

Near-field light-generating element, near-field optical recording device,
and near-field optical microscope

Lichterzeugendes Nahfeld-Element, nahfeld-optische Aufzeichnungsvorrichtung
und optisches Nahfeldmikroskop

Element generateur de lumiere en champ proche, appareil d'enregistrement
optique de champ proche et microscope de balayage optique de champ
proche

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PATENT (CC, No, Kind, Date): EP 1251383 A2 021023 (Basic)

APPLICATION (CC, No, Date): EP 2002252636 020415;

PRIORITY (CC, No, Date): JP 2001118543 010417; JP 200292276 020318

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06; G11B-007/00

ABSTRACT WORD COUNT: 84

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200243	576
SPEC A	(English)	200243	8620
Total word count - document A			9196
Total word count - document B			0
Total word count - documents A + B			9196

...SPECIFICATION vacuum-evaporation and then the front end of the tip is
cut by the FIB (**focused** ion beam) method. As a result, a tip having an
optical aperture at its front end is fabricated. The contour shape of
the aperture is determined...

...head subsequently. Therefore, a circular aperture is normally formed.

An optical probe used in a near - field optical microscope is fabricated by heating, drawing, and cutting an optical fiber , depositing a light-shielding film of Al, and then cutting the front end to form...

...laser light source is directed to the aforementioned optical head or probe to thereby produce near - field light . The incident light is guided from the laser by an optical fiber and propagated through air to the microscopic aperture. The light from the laser is linearly...to the recording medium 105. To guide light fluxes from a laser 101 to the near - field optical head 104, an optical waveguide 103 consisting of a core and a clad fixed to a lens 102 and the suspension arm 107 is used. A polarization-maintaining...by vacuum evaporation. Finally, in step S304, the front end is cut by the FIB (focused ion beam) method and an optically small aperture 206 is fabricated. The minute aperture 206 can be formed without using FIB...of optical information, a lens 602 placed in front of the light source 601, an optical fiber 603 for propagating light collected by the lens 602 to the near - field optical probe 1000, a prism 611 placed below a specimen 610 and reflecting propagating light produced...

...mode in which light reflected from the specimen 610 is detected. Additionally, the near-field optical probe 1000 can be used in a dynamic focus mode in which the lever 702 is vibrated by applying vibration to the near-field...a light-shielding film 704 is deposited on the front surface. Undesired portions of the light -shielding film 704 are removed by a focused ion beam or pressing the tip 701 against the specimen during observation. As shown in...

15/3,K/2 (Item 2 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01445013

Information recording/reproduction apparatus

Informationsaufzeichnungen- / -wiedergabegerat

Appareil d'enregistrement / de reproduction d'informations

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1233410 A2 020821 (Basic)

APPLICATION (CC, No, Date): EP 2002251022 020214;
PRIORITY (CC, No, Date): JP 200140589 010216
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
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CLAIMS A	(English)	200234	324
SPEC A	(English)	200234	8503
Total word count - document A			8827
Total word count - document B			0
Total word count - documents A + B			8827

...ABSTRACT A2

An information recording/reproduction apparatus including a **near field optical head** (104) having a minute aperture (206) formed thereon, a substantially rod-like **optical waveguide** (103) having a core (201) and a clad (202), a reflection surface (203) formed at one of end faces of the **optical waveguide**, for irradiating light to the **near field optical head**, a light reception portion and a recording medium, and utilizing near field light, a lens function (205) is formed on a surface of the **near field optical head** different from the surface of the minute aperture, and a **core** end face is formed at an intermediate part spaced apart from the reflection surface.

...SPECIFICATION as to respond to swell of the disk.

A method of supplying light to the **near field optical head** having such a construction comprises the steps of connecting an **optical fiber** or an **optical waveguide** to the **near field optical head**, and irradiating a luminous flux from a laser as a light source to the...

...apparatus so as to condense the luminous flux irradiated from the end face of the **optical waveguide** to a portion in the proximity of the minute aperture, to increase the intensity of **near field light** occurring in the proximity of the minute aperture and to improve light utilization efficiency. When...

...having a high NA is used, a condensation spot size can be made small and **optical energy** can be **concentrated** on a finer region. When the minute aperture is disposed at this condensation point, the...tip is accomplished.

The information recording/reproduction apparatus produced by discretely preparing and assembling the **optical waveguide**, the mirror, the lens, and the like, can generate sufficiently strong **near field light** by use of the minute aperture, and can accomplish recording and reproduction of ultra-high...

...includes a light source, a suspension arm, a flexure fixed to the suspension arm, a **near field optical head** having a minute aperture formed therein, a substantially rod-like **optical waveguide** having a **core** and a clad, a reflection surface formed on the side of one of the end faces of the **optical waveguide**, for irradiating light to the **near field optical head**, a light reception portion, and a recording medium, the apparatus utilizing near field light; wherein a lens function

for a head is formed on the surface of the near field optical head different from the surface of the minute aperture, and a core end face is formed at an intermediate part of the optical waveguide.

It becomes therefore...apparatus has the mechanism in which the distal end portion of the core of the optical waveguide has the lens function of a convex or concave shape. Since this lens function is combined with the lens formed in the near field...

...fourth information recording/reproduction apparatus has the construction in which the reflection surface of the optical waveguide has the concave shape that reflects the luminous flux and much more enlarges its expansion angle, and can...the recording medium 105.

To guide a luminous flux from a laser 101 to the near field optical head 104, an optical waveguide 103 that comprises a lens 102, and a core and a clad fixed to the suspension arm 107 is employed. Intensity modulation may be...

...minute aperture 206 is formed in the shading film on the bottom surface of the near field optical head 104. The micro-lens 205 condenses the luminous flux from the optical waveguide 103 to the minute aperture 206. The waveguide 103 comprising the core 201 and the clad 202 is fixed to the upper part of this near field optical head 104.

This embodiment uses the glass substrate that permits transmission of light at the...

...view taken along a line AA' in Fig. 3A.

The optical waveguide 103 comprises the core 201 and the clad 202, and the reflection surface 203 for irradiating light to the near field optical head 104 is formed on one of the end faces of the optical waveguide 103. Here, a reflection film is formed on the reflection surface 203, whenever necessary.

The micro-lens 205 formed on the near field optical head 104. Since the core 201 terminates at the intermediate part of the optical waveguide 103, the distance from the core end face to the micro-lens 205 can be...

...The luminous flux outgoing from the laser 101 is allowed to be incident into the optical waveguide 103 by the lens 102 and is guided to the near field optical head 104.

The core 201 of the optical waveguide 103 terminates at the intermediate part of the optical waveguide 103, and the core end...

...203 as the luminous flux having a certain expansion angle and is irradiated to the near field optical head.

As explained already, the core 201 terminates at the intermediate part of the optical waveguide 103 and the core end face is formed as shown in Fig. 3. Therefore, the...condense the luminous flux having a high energy density to the minute aperture of the near field optical head by combining together the optical waveguide comprising the core and the clad, the reflection surface spaced apart from the core end face and the micro-lens formed in the near field optical head. Further, this apparatus can increase the intensity of near field light generated in the...and the diameter of the luminous flux incident into the micro-lens formed in the near field optical head becomes further greater.

Fig. 7 shows the shape of another optical waveguide (core portion) in the information recording/reproduction apparatus according to Embodiment 3.

In this embodiment, the...

...7, the diameter of the luminous flux incident into the micro-lens formed in the **near field optical** head becomes further greater than when the **core** end face is planar. Then, the NA of the luminous flux incident from the micro...

...to this embodiment employs the construction in which the core distal end portion of the **optical waveguide** has the convex or **concave** lens function. Therefore, in addition to the effect of the information recording/reproduction apparatus of...

...Embodiment 1 shown in Fig. 3 with the exception that the reflection surface of the **optical waveguide** is a **concave** reflection surface 801 as a surface that enlarges the expansion angle of the luminous flux outgoing from the core end face by reflection.

The **concave** reflection surface 801 as the reflection surface of the **optical waveguide** reflects the luminous flux outgoing from the end face of the core 201 and...

...condense the luminous flux having a high energy density at the minute aperture of the **near field optical** head by forming the reflection surface of the **optical waveguide** into the shape that expands the expansion angle of the luminous flux outgoing from the **core** end surface, and can further strengthen the intensity of **near field light** generated in the proximity of the minute ...apparatus has the mechanism in which the distal end portion of the core of the **optical waveguide** has the lens function of the convex or **concave** shape. Since this lens function is combined with the lens formed in the near field...

...fourth information recording/reproduction apparatus has the construction in which the reflection surface of the **optical waveguide** has the **concave** shape that reflects the luminous flux and much more enlarges its expansion angle, and can...

...CLAIMS comprising:

- a light source;
- a suspension arm;
- a flexure fixed to said suspension arm;
- a **near field optical** head having a minute aperture formed therein;
- a substantially rod-like **optical waveguide** having a **core** and a clad;
- a reflection surface formed at the side of one of the end faces of said **optical waveguide**, for irradiating light to said **near field optical** head;
- a light reception portion; and
- a recording medium; wherein a lens function for a head is formed on the surface of said **near field optical** head different from the surface of said minute aperture, and a **core** end face is formed at an intermediate part spaced apart from said reflection surface.

2...

15/3,K/3 (Item 3 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01344148
Information recording and reproducing apparatus
Informationsaufzeichnungs- und -wiedergabevorrichtung
Appareil d'enregistrement et de reproduction d'information

PATENT ASSIGNEE:

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EP 1148477 A3 021211

APPLICATION (CC, No, Date): EP 2001303351 010410;

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CLAIMS A	(English)	200143	409
SPEC A	(English)	200143	9508
Total word count - document A			9917
Total word count - document B			0
Total word count - documents A + B			9917

...SPECIFICATION a method of supplying light to an opening, there is provided means for connecting an optical fiber or an optical waveguide to the near - field light head from above or a horizontal direction or irradiating light flux from a laser provided above the near - field light head directly to the near - field light head.

Further, by using an optical fiber probe or a cantilever type optical probe which is represented by a near - field optical microscope and an opening portion of which is sharpened by fabricating an optical fiber, while maintaining a position relative to media by an interactive action of tunnel current or...of the substrate or a lattice defect of the substrate. Hence, there is devised a near - field light head fabricated with a very small opening and an optical waveguide for guiding light to the very small opening only at one face of the substrate...

...shape formation can be carried out.

However, according to the above-described structure of the near - field light head, the very small opening and the optical waveguide for guiding light to the very small opening are fabricated on the same side of...

...tens nanometers, there poses a problem that there is not a space for

...CLAIMS opening;
a light guiding structure for guiding light flux from a light source to the near - field light head; and
a light receiving portion;
wherein the very small opening and an optical waveguide for guiding light to the very small opening are disposed on a same side of...
...recording and reproducing apparatus according to any one of claims 1 through 5, wherein the optical propagating portion comprises an optical waveguide and a lens for focusing the light flux from the light source to an end face of the optical waveguide.
7. An information recording and reproducing...

15/3,K/4 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01270944
NEAR FIELD OPTICAL HEAD AND METHOD FOR MANUFACTURING THE SAME
OPTISCHER NAHFELDKOPF UND VERFAHREN ZU DESSEN HERSTELLUNG
TETE OPTIQUE A CHAMP PROCHE ET PROCEDE DE FABRICATION DE CELLE-CI
PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1122722 A1 010808 (Basic)
WO 200115151 010301

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PRIORITY (CC, No, Date): JP 99238062 990825; JP 99336062 991126

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

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CLAIMS A	(English)	200132	997
SPEC A	(English)	200132	12254
Total word count	- document A		13251
Total word count	- document B		0
Total word count	- documents A + B		13251

...SPECIFICATION is launched into the aperture by means of a light waveguide path such as an **optical fiber**, the intensity of the **near - field light** emitted from the aperture becomes small resulting in problems that the recording and reproducing rate a **concave** shape to provide a near-field **optical** head that **concentrates light** emitted from the **light** propagating medium. In addition, in the seventh near-field optical head related to the present invention, the head has a lens function to **concentrate the light** on the tip of the **light** propagating medium.

Therefore, according to the sixth and seventh near-field optical head, it is...

...that the spot diameter of the light emitted from the light emitting edge of the **optical fiber** in the minute structure can be reduced. Therefore, the intensity of the **near - field light** generated by the minute structure is increased.

Further, the fourteenth near-field optical head related...

...film waveguide.

Consequently, with the use of a thin film waveguide thinner and lighter than an **optical fiber** as the light propagating medium, the mass of the **near - field optical** head is reduced. Therefore, it becomes easy to improve the positioning accuracy or the positioning...tip of the optical fiber.

Therefore, it is easy to arrange the tip of the **optical fiber** close to the mirror so as to provide a **near - field optical** head generating a **near - field light** of great intensity.

Further, the sixth method of manufacturing the near-field optical head related...

...method characterized in that the method includes a machining process of the tip of the **optical fiber** in a lens shape for **concentrating** the emitted **light** from the **optical fiber** onto the minute structure.

Therefore, the spot diameter of the emitted light from the **optical fiber** on the minute structure is reduced so that a **near - field optical** head generating **near - field light** of great intensity from the minute structure can be provided.

In addition, the fifteenth near...near-field optical head 1000 taken along the A-A' line in Fig. 1a. The **near - field optical** head 1000 comprises a slider part 1001, a mirror part 1002 and an **optical fiber** 1803, the tip of which is partly ground in parallel with the optical axis. Fig...

...minute structure. Reflection coating 1004 is formed on the surface of the hole 1005 to **concentrate** the **light** incident in the hole 1005 to the minute aperture 1006 effectively. Additionally, the slider part...

...width W1, W2 and the dimensions of the protrusion 1008 are defined such that the **near - field light** emitted from the minute aperture 1006 is maximized. The **optical fiber** 1803 is so constructed that its tip is ground in parallel with the optical axis...such as aluminum or gold, or a dielectric multilayer.

As described above, according to the **near - field optical** head 1000 related to the first embodiment, as the tip of the **optical fiber** 1803 is ground and so the tip of the optical fiber 1803 can be arranged...

Then, near-field light is irradiated onto the record pit from the minute aperture, while concentrating the propagating light transmitted through the recording medium 504 to the photo detector 507 of the condenser lens...the servo circuit 508 drives the servo motor 509. On the other hand, the propagating light transmitted through the recording medium 103 is concentrated on the photo detector as a signal including, for example, a difference of the transmission...

...lies in the geometry of the mirror 2002. The mirror 2002 is consisted of a concave mirror. The light emitted from the optical fiber 2803 by the mirror 2002 is changed in its propagating direction toward the minute ...

...optical fiber 3803 of the present invention is processed in a spherical shape.

Accordingly, the light emitted from the tip of the optical fiber propagates while concentrating itself toward the minute aperture 3006. Therefore, as for the near - field optical head 3000, the near-field light generated from the minute aperture 3006 has a greater...

...be deformed by the stress generated during period of bonding or joining process of the optical fiber 1803 to the slider part 1001. However, by adopting the structure of the near - field optical head 4000 according to the present embodiment, even though the slider part 4001 may be...

...the slider part 4001 thin, the spatial propagating distance of the light generated from the optical fiber is shortened so that the near - field optical head 4000 of the present embodiment has a greater intensity than the near-field optical...near-field optical head 9000 related to the ninth embodiment of the present invention. The near - field optical head 9000 consists of a slider part 9001 and an optical fiber 9803 equipped with mirror and a mirror 9090. The slider part 9001 is approximately the...

...1003 shown in the first embodiment. The different point is that the tip of the optical fiber is ground and the mirror 9090 is formed on the ground surface. According to the near - field optical head 9000 of the above structure, not only because of the effects described in the...

...of the present embodiment has following advantages in comparison with the construction having a ground optical fiber such as the near - field optical head 1000 of the aforementioned first embodiment. In any of the near-field optical head...be launched into the minute aperture 11006.

In addition, for the light incident in the near - field optical head 11000 of the embodiment related to the present invention, a light waveguide or an optical fiber 700 having a maldistributed core is effective. This light waveguide or the optical fiber 700...to the present invention, in addition to the effects of the first to the twelfth near - field optical head, the spot diameter of the light emitted from the light emitting edge of the optical fiber in the minute structure can be reduced because the light emitting edge of the optical fiber can be arranged closer to the mirror. Therefore, the intensity of the near - field light generated from the minute structure can be increased.

Further, according to the fourteenth near-field...

...CLAIMS head of any of claims 1 to 5, wherein the mirror is configured in a concave shape which condenses the light being emitted from the light propagating medium.

7. A near-field optical head of any of claims 1 to 6...

...fixed on the substrate and its light emitting edge fixed on the slider.
 13. A near - field optical head of any of claims 1 to 12, wherein the light propagating medium is an optical fiber machined in a narrow shape by means of grinding the tip thereof in parallel with...
 ...reflection coating and a forming process of a configuration thereof.
 16. A method for manufacturing near - field optical head of claim 15, wherein the method includes a fixing process of the optical fiber on the slider or the substrate on which the mirror is formed.
 17. A method...
 ...of the tip of the optical fiber in parallel with the optical axis of the optical fiber to sharpen the tip of the optical fiber .
 20. A method for manufacturing near - field optical head of claim 16 or 17, wherein the method includes a shaping process of the...
 ...of the optical fiber in a lens shape to condense the emitted light from the optical fiber onto the minute structure.
 22. A near - field optical head comprising:
 a light propagating medium;
 a mirror for reflecting the light emitted from the...

15/3,K/5 (Item 5 from file: 348)
 DIALOG(R) File 348:EUROPEAN PATENTS
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01260291

OPTICAL HEAD
 OPTISCHER KOPF
 TETE OPTIQUE
 PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1120778 A1 010801 (Basic)
 WO 200108142 010201

APPLICATION (CC, No, Date): EP 2000946388 000718; WO 2000JP4824 000718

PRIORITY (CC, No, Date): JP 99210971 990726; JP 2000183285 000619

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-021/21;

G01N-013/14; G12B-021/06
ABSTRACT WORD COUNT: 75

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200131	301
SPEC A	(English)	200131	4430
Total word count - document A			4731
Total word count - document B			0
Total word count - documents A + B			4731

...SPECIFICATION invention can similarly be embodied also by a collection mode for generating the near-field light at a surface of the record medium and focusing light scattered by the very small aperture.

Fig. 2 shows a flexure structure for a near...

...rotating at high speed.

Fig. 3 shows an enlarged view of the flexure for the near - field light head according to Embodiment 1 of the invention. An optical waveguide 12 is adhered to a surface of a supporter for connecting the suspension arm and...

15/3,K/6 (Item 6 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01109076

NEAR-FIELD OPTICAL HEAD

OPTISCHE NAHFELDKOPF

TETE OPTIQUE EN CHAMP PROCHE

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 996122 A1 000426 (Basic)
WO 9959149 991118

APPLICATION (CC, No, Date): EP 99918343 990507; WO 99JP2393 990507

PRIORITY (CC, No, Date): JP 98127569 980511; JP 9984291 990326

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135

ABSTRACT WORD COUNT: 134

NOTE:

Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200017	394
SPEC A	(English)	200017	5441
Total word count - document A			5835
Total word count - document B			0
Total word count - documents A + B			5835

...SPECIFICATION on-silicon-substrate chip formed through anisotropic etching, or otherwise a sharpened tip of an **optical fiber** or a microscopic protrusion on that chip.

Meanwhile, there is a proposal of a **near - field optical** memory as disclosed, for example, in (E. Betzig et al., Science 257, 189 (1992)) applied...for transmitting through the laser light, an optical head 1 having a microscopic aperture, an **optical** head drive actuator 30, a lens 29 for **focusing** a scattering **light** caused due to interaction between a near-field light 7 and a recording medium 33...

...by the wavelength plates 22, 23, and introduced to the optical head 1 through the **optical waveguide** 24.

As will be stated later in Fig. 1, a **near - field light** 7 caused at a bottom surface of the optical head interacts with the recording medium

...to the recording medium, it is easy to make a structure for detecting the transmission **light** through the recording medium. The scattering **light** is **focused** by the **focusing** lens 29 and then converted into an electric signal by the light detecting element 25...

15/3,K/7 (Item 7 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

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01095778

RECORDING APPARATUS .

AUFZEICHNUNGSGERAT

APPAREIL D'ENREGISTREMENT

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 PATENT (CC, No, Kind, Date): EP 984438 A1 000308 (Basic)
 WO 9949459 990930
 APPLICATION (CC, No, Date): EP 99942599 990312; WO 99JP1212 990312
 PRIORITY (CC, No, Date): JP 9872786 980320; JP 98291142 981013; JP 98302266
 981023; JP 9916202 990125
 DESIGNATED STATES: DE; FR; GB
 INTERNATIONAL PATENT CLASS: G11B-007/09; G11B-007/135; G01N-037/00
 ABSTRACT WORD COUNT: 135
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CLAIMS A	(English)	200010	2057
SPEC A	(English)	200010	16879
Total word count - document A			18936
Total word count - document B			0
Total word count - documents A + B			18936

...SPECIFICATION information recording density on the recording medium is limited to the spot size obtainable by **focusing laser light**. Accordingly, in the conventional **optical** information recording apparatus adopting a magneto-optical recording scheme and phase change recording scheme, it has been impossible to reduce the spot size obtained by **focusing laser light** to smaller than a laser light diffraction limit, i.e. a half wavelength of laser light.

On the other hand, there...the near-field light is scattered by the microscopic aperture 12. The scattered light (propagation light) is introduced through the microscopic aperture 12 to a **focusing optical** system 15 placed above the microscopic aperture 12. Thus, detection of near-field light is achieved in a collection mode as stated before. The propagation light introduced to the **focusing optical** system 15 is introduced through a mirror 16 to a light detecting mechanism 17 and converted into an electric signal to be processed into a reproduced signal. Here, the **focusing optical** system 15 is, for example, a lens optical system, optical fiber optical system or light guide or the like. Also, the light detecting mechanism 17...scattered by a fine structure on the surface of the recording medium 10. The scattered light (propagation light) is introduced to the **focusing optical** system 15 arranged on the back side of the recording medium 10. Thus, detection of the near-field light is achieved in the afore-said illumination mode. The propagation light introduced into the **focusing optical** system 15 is introduced to the light detecting mechanism 17 through the mirror 16 arranged on the back side of the recording...the near-field light is scattered by the microscopic aperture 12. The scattered light (propagation light) is introduced through the microscopic aperture 12 to a **focusing optical** system 15 placed above the microscopic aperture 12. Thus, detection of near-field light is achieved in the collection mode. The propagation light introduced to the **focusing optical** system 15 contains two different wavelength components ((lambda)1 and (lambda)2) similarly to the...

...scattered by a fine structure in the surface of the recording medium 10. The scattered light (propagation light) is introduced and **focused** to the **focusing optical** system 15 arranged on the back side of the

due to scattering to the focusing optical system 105 is introduced through a mirror 107 to a light detecting mechanism 110 and...

...propagation light created by the microscopic aperture 103 and introduced due to scattering to the focusing optical system 106 is introduced through a mirror 108 to a light detecting mechanism 109 and...in the recording apparatus explained in Fig. 20 a system formed by one mirror, the focusing optical system and the microscopic aperture is utilized to enable information recording onto the recording medium...

...with the same reference characters.

In Fig. 21(a), a dichroic mirror 117 and a light illumination/focusing optical system 115, when conducting information reproduction, respectively function as the mirror 107 and the focusing optical system 115 shown in Fig. 20. A laser light source 111 is a light illuminating means for recording information. When reproducing information, laser light...

...and 110.

The laser light incident on the dichroic mirror 117 is introduced to the light illuminating/focusing optical system 115. On this occasion, the light illuminating/focusing optical system 115 serves as a focusing optical system. The laser light focused by the light illuminating/focusing optical system 115 is introduced to the microscopic aperture 102 to create near-field light. This...

...scattered by a fine structure on the surface of the recording medium 10. The scattered light (propagation light) is introduced and focused to the focusing optical systems 105 and 106 arranged on the back side of the recording medium 10. Thus...

...The propagation light created by the microscopic aperture 102 and introduced through scattering into the focusing optical system 105 is introduced to the light detecting mechanism 110 through the mirror 107 and converted as a reproduced signal into an...

...the propagation light created by the microscopic aperture 103 and introduced through scattering into the focusing optical system 106 is introduced to the light detecting ...of propagation light scattered by the microscopic apertures 102, 103 is made through the corresponding focusing optical systems 105, 106 to the microscopic apertures. Alternatively, in place of the focusing optical systems 105, 106, one optical lens system can be arranged so that the light focused by this optical lens system is separated based on wavelength or modulation frequency, thereby distinguishing propagation light portions...20 illumination is scattered by the microscopic aperture 12 placed in proximity thereto. The propagation light created due to scattering is introduced to the focusing optical system 15 through the microscopic aperture 12 and then conducted to the light detecting mechanism...light 20 is scattered by the microscopic aperture 152 positioned in proximity thereto. The propagation light created by the scattering is introduced to the focusing optical system 15 through the microscopic aperture 152, and then conducted to the light detecting mechanism...

NEAR FIELD OPTICAL MEMORY HEAD
OPTISCHER NAHFELDKOPF FÜR SPEICHER
TÊTE DE MÉMOIRE OPTIQUE DANS LE CHAMP PROCHE
PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 978829 A1 000209 (Basic)
WO 9944198 990902

APPLICATION (CC, No, Date): EP 99905268 990222; WO 99JP781 990222

PRIORITY (CC, No, Date): JP 9843715 980225; JP 9843718 980225; JP 994548
990111; JP 996802 990113

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135

ABSTRACT WORD COUNT: 126

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SPEC A	(English)	200006	10938
Total word count - document A			12245
Total word count - document B			0
Total word count - documents A + B			12245

...SPECIFICATION sample in a very small region is also made feasible.

In the case of a near - field optical microscope, there is
frequently used an optical fiber probe provided with a very small
aperture at its front end and fabricated by sharpening...

...and coating a surrounding thereof by a metal and scattered light
produced by operating the optical fiber probe interactively with
near - field light, is made to pass through an inner portion of the
optical fiber probe and guided to an optical detector.

Further, observation of a surface can also be carried out by
introducing light to a sample via an optical fiber probe to thereby
generate near - field light at a very small aperture of the optical
fiber probe and guiding scattered light generated by an interaction
between the near - field light and a fine structure of a surface of

the sample to an optical detector by using a focusing system added further.

Further, near-field light is not only utilized for a microscope but is applicable to high density optical memory record in which near - field light having a high energy density is generated at a very small aperture of an optical fiber probe by introducing light having a comparatively large intensity to a sample via an optical...

...as an optical memory head suitable for reproduction and recording of an optical memory utilizing near - field light .

However, the optical fiber probe is provided with the sharpened front end and accordingly, the mechanical strength is not...

...is not suitable for mass production and array formation. Further, scattered light provided by disturbing near - field light is very weak and therefore, when the scattered light is detected by passing through an optical fiber , there is needed a device for providing a sufficient light amount at a detecting unit. Further, when a sufficient magnitude of near - field light is generated by passing through an optical fiber , there is needed a device for focusing light to a very small aperture portion of the optical fiber.

Further, according to the cantilever type optical probe, reception of scattered light from the...portion of an aperture edge portion of the tapered aperture portion 3. According to the optical waveguide path, one end face (light incident face) thereof constitutes an end face of the near - field optical memory head 11, other end face (light emitting face) is disposed at the aperture edge...memory head is suitable for mass production and can deal with array formation of the near - field optical memory heads.

Further, according to Embodiment 1, mentioned above, the core 5 and the clad 6 formed at the aperture edge portion of the tapered aperture portion 3 may be...

...in Fig. 1 are attached with the same notations.

In Fig. 3, according to a near - field optical memory head 16, the light incident face of the core 5 and the clad 6 of the near - field optical memory head 11 according to Embodiment 1, constitutes an upper face of the near-field...

...loss.

The illumination light 9 radiated from the light emitting face after passing through the core 13 forms near - field light of a reflective type at the information recording portion constituting the reproduction position. Similar to...in the embodiment of Fig. 3, a similar effect is achieved by using a bent optical waveguide path without using the reflective layer 15, constituting the upper face portion of the near - field optical memory head 16 by an end face (light incident face) of the optical waveguide path and arranging other end face (light emitting face) at the aperture edge portion of...of Embodiment 4 and is processed by a signal processing unit, not illustrated.

Therefore, by focusing light by the microlens 39, the propagating light 35 having an intensity sufficient for being able to determine a recorded state of the...constituent elements is dispensed with, further, the array formation can easily be realized.

Further, by focusing light by the lens, the propagating light having an intensity sufficient for being able to determine the recorded state of the information...

20/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
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07528728 **Image available**
INFORMATION RECORDING AND REPRODUCING DEVICE

PUB. NO.: 2003-022560 [JP 2003022560 A]
PUBLISHED: January 24, 2003 (20030124)
INVENTOR(s): KASAMA NOBUYUKI
OMI MANABU
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KATO KENJI
ARAWA TAKASHI
SHINOHARA YOKO
APPLICANT(s): SEIKO INSTRUMENTS INC
APPL. NO.: 2001-208398 [JP 20011208398]
FILED: July 09, 2001 (20010709)

ABSTRACT

... a light source to a microstructure, such as an opening, lightens the mass of a near - field optical head, forms the stronger near - field light near the microstructure and realizes recording and reproducing of information at an ultra-high density...
...tracking is performed.

SOLUTION: This information recording and reproducing device comprises the light source, the near - field optical head formed with the microstructure, an optical waveguide having a core and clad, a photodetecting section and a recording medium and uses the near - field light, in which the near - field optical head is formed with a lens mechanism on the surface different from the surface formed with the microstructure and the optical waveguide is formed with a core end face in mid-way of the optical waveguide and is formed with at least a first reflective surface and a second reflective surface...

20/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
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07377159 **Image available**
INFORMATION RECORDING AND REPRODUCING DEVICE

PUB. NO.: 2002-245659 [JP 2002245659 A]
PUBLISHED: August 30, 2002 (20020830)
INVENTOR(s): KASAMA NOBUYUKI
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ARAWA TAKASHI
SHINOHARA YOKO
APPLICANT(s): SEIKO INSTRUMENTS INC
APPL. NO.: 2001-040589 [JP 20011040589]
FILED: February 16, 2001 (20010216)

ABSTRACT

... To provide an inexpensive information recording and reproducing device

which reduces the mass of a near - field optical head by preventing an increase in the number of components while efficiently guiding the luminous flux from a light source to a fine aperture, generates intenser near - field light nearby the fine aperture, and records and reproduces information fast with high density through high-speed tracking.

SOLUTION: The information recording and reproducing device, using near - field light , comprises a near - field optical head which has the fine aperture formed, a nearly rod-shaped optical waveguide equipped with a core and a clad , a reflecting surface which is formed on one end surface side of the optical waveguide so as to irradiate the near - field optical head with the light, a photodetection part, and a recording medium; and the near - field optical head has a lens function formed on the surface different from the fine aperture and the optical waveguide has a core end surface formed in the middle of the optical waveguide .

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20/3,K/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO
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07137787 **Image available**
OPTICAL WAVEGUIDE PROBE, ITS MANUFACTURING METHOD AND SCANNING-TYPE NEAR FIELD MICROSCOPE

PUB. NO.: 2002-006159 [JP 2002006159 A]
PUBLISHED: January 09, 2002 (20020109)
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APPL. NO.: 2001-078891 [JP 20011078891]
FILED: March 19, 2001 (20010319)
PRIORITY: 2000-117967 [JP 2000117967], JP (Japan), April 19, 2000
(20000419)

ABSTRACT

... the optical axis of the optical waveguided 2. By this, the loss of the transmission light 7 at the bent part 10 is reduced, and the transmission light 7 is focused into the fine aperture 5. Accordingly, the near field light can be effectively radiated from the fine aperture 5.

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20/3,K/4 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01364947
Method for forming aperture, near field optical head and method for fabricating the same and information recording/reading apparatus
Verfahren zur Herstellung einer Aperturblende, optischer Nahfeldkopf und Verfahren zu dessen Herstellung, Vorrichtung zum Aufnehmen und

Wiedergeben von Informationen

Procede de production d'une ouverture, tete optique a champ proche et
procede de production associe, appareil d'enregistrement/de
reproduction des informations

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PATENT (CC, No, Kind, Date): EP 1162605 A2 011212 (Basic)
EP 1162605 A3 030402

APPLICATION (CC, No, Date): EP 2001304917 010605;

PRIORITY (CC, No, Date): JP 2000173852 000609; JP 2000371828 001206; JP
2000379266 001213; JP 2001126415 010424

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/00

ABSTRACT WORD COUNT: 166

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200150	754
SPEC A	(English)	200150	12318
Total word count - document A			13072
Total word count - document B			0
Total word count - documents A + B			13072

...SPECIFICATION medium 1107.

In order to lead a luminous flux from a laser 1101 to the near field
optical head 1106, a lens 1102, an optical fiber 1103 fixed to
the suspension arm 1109, a lens 1104 and a mirror 1105 are used.

The optical fiber 1103 is used here but...

...recording medium 1107 and recording information will be described with
reference to Fig. 18.

The near field optical head 1106 having the aperture that is
mounted on the tip end of the suspension...

...on the recording medium 1107. For this purpose, air-bearing surfaces are

formed on the near field optical head. Additionally, in order to allow the near field optical head 1106 to follow the recording medium 1107, the function of the flexure 1110 is...

...recording medium 1107. The luminous flux emitted from the laser 1101 is entered to the near field optical head 1106 by the lens 1102, the optical fiber 1103, the lens 1104 and the mirror 1105, which form a light guiding structure. Then, it is guided to the aperture of the near field optical head 1106 to generate a near field light near the aperture. The scattered light generated from the consequence of the interaction of this near field light with the recording medium 1107 is received by the light receiving head 1108 fixed to...

...of information. Furthermore, recording information on the recording medium 1107 is realized in which the near field optical head 1106 having the aperture is moved to a desired position on the recording medium as the recording medium 1107 is brought close to the aperture and the near field light is irradiated onto the recording medium 1107 from the aperture for writing operation.

In the...

20/3,K/5 (Item 2 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01344185

Optical waveguide probe and manufacturing method of the same, and scanning near field optical microscope

Lichtwellenleiter-Sonde und ihr Herstellungsverfahren, sowie optisches Nahfeld-Rastermikroskop

Sonde a guide d'ondes lumineuses et son procede de production et microscope de balayage optique a champ proche

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PATENT (CC, No, Kind, Date): EP 1148371 A2 011024 (Basic)
EP 1148371 A3 030502

APPLICATION (CC, No, Date): EP 2001303515 010417;

PRIORITY (CC, No, Date): JP 2000117967 000419; JP 200178891 010319

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06; G12B-021/02

ABSTRACT WORD COUNT: 119

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200143	835
SPEC A	(English)	200143	7504
Total word count - document A			8339
Total word count - document B			0
Total word count - documents A + B			8339

...SPECIFICATION the foregoing embodiment as an optical micro cantilever.

As shown in the drawing, this scanning **near - field optical** microscope 1000 includes an optical micro cantilever 410, a light source 509, a **lens** 510 for condensing a propagated light from the light source and irradiating an **optical waveguide** of the optical micro cantilever, a prism 502 disposed under a sample 501 and reflecting a propagated light obtained by scattering of a **near - field light** generated at a tip of the optical micro cantilever, a **lens** 505 for condensing the propagated light from the prism, and a light detector 506 for receiving the propagated light condensed by the **lens**.

Besides, above the optical micro cantilever, the microscope includes a laser oscillator 512 for oscillating by the lens 510, and is irradiated to the minute aperture through the **optical waveguide** of the optical micro cantilever. By this, the **near - field light** is generated in the vicinity of the minute aperture of the optical micro cantilever. On...

...optical information of the sample 501 reflected by the prism 502 is condensed by the **lens** 505, and is introduced into the optical detector 506. The computer 507 receives the signal...

20/3,K/6 (Item 3 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01335236

Process of producing near-field light generating element
Verfahren zur Herstellung lichterzeugender Nahfeld-Elemente
Procede de production d'elements generateurs de lumiere en champ proche
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PATENT (CC, No, Kind, Date): EP 1139121 A2 011004 (Basic)
EP 1139121 A3 031210
APPLICATION (CC, No, Date): EP 2001301662 010223;
PRIORITY (CC, No, Date): JP 200062407 000307
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G02B-003/00; G12B-021/02; G12B-021/06;
G11B-007/22
ABSTRACT WORD COUNT: .118
NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200140	463
SPEC A	(English)	200140	12265
Total word count - document A			12728
Total word count - document B			0
Total word count - documents A + B			12728

...SPECIFICATION portion using luminous flux coming from an optical structure such as a lens or an **optical waveguide**, the vertex of the convex-formed optical propagation component coincides with the axis of luminous...

...luminous flux coming from the optical structure. Accordingly, it is made possible to provide the **near - field light** generating element that is excellent in mass production at a low cost.

Furthermore, in the...104 and micro-aperture forming process 105.

In optical guide structure forming process 101, a **optical waveguide** substrate 301 that has an optical wave guide shown in FIG. 3 is prepared. Then...

...104 and micro-aperture forming process 105, the micro-aperture substrate 304 is prepared. The **near - field light** generating element shown in FIG.3 prepared by disposing the **optical waveguide** substrate 301, a plane micro **lens** 303 and a micro-aperture substrate 304 so that luminous flux emitted from the optical wave guide of the **optical waveguide** substrate 301 is condensed adjacent to a micro-aperture by the plane micro **lens** 303.

First, a description will be made about the optical guide structure forming process 101...there between as shown in FIG.3. As a result, luminous flux fed to the **optical waveguide** on the **optical waveguide** substrate 301 is diffused from the outgoing end of the **optical waveguide** and reflected on the incline on the **optical waveguide** substrate 301. After that, the luminous flux condensed at the micro-aperture by transmitting through the plane micro **lens** 303. Thus, **near - field light** is formed adjacent to the micro-aperture. When a storage medium or a sample is...

...by virtue of interaction among the micro-aperture the storage medium and the Sample, the **near - field light** is converted into propagation light. By receiving the propagation light with a light-receiving element ...

...by positioning a storage medium and the micro-aperture close to each other, move the **near - field light** generating element that has the

...the convex-shaped portion using luminous flux coming from an optical structure such as a lens or an optical waveguide, the vertex of the convex-formed optical propagation component coincides with the axis of luminous...

...number of production processes can be reduced. Accordingly, it is made possible to provide the near - field light generating element that is excellent in mass production at a low cost.

As described hereinbefore...

20/3,K/7 (Item 4 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01295168

Near-field optical probe and manufacturing method for same, and near-fied optical apparatus using the near-field probe

Probe fur optisches Nahfeld und Herstellungsverfahren hierzu, optisches Nahfeld-Gerat mit solcher Probe

Echantillon pour un champs proche optique et son procede de fabrication, appareil optique de champs proche utilisant cet echantillon

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PATENT (CC, No, Kind, Date): EP 1111426 A2 010627 (Basic)
EP 1111426 A3 030319

APPLICATION (CC, No, Date): EP 2000311436 001220;

PRIORITY (CC, No, Date): JP 99361701 991220; JP 2000130826 000428; JP 2000352778 001120

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06

ABSTRACT WORD COUNT: 137

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
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CLAIMS A	(English)	200126	1589
SPEC A	(English)	200126	12611
Total word count - document A			14200
Total word count - document B			0

probe 2000 and the lens . Accordingly, position aligning of the near - field optical probe 2000 is facilitated thus simplifying operation of the scanning probe microscope 20000.

A manufacturing...field light.

(Embodiment 5)

Fig. 22 shows a structural view of a part of a near - field optical apparatus using a near - field optical probe according to a fifth embodiment of the invention. This is basically the same as...

...20000 shown in Fig. 3, and same points are omitted of illustration and explanation. The light from a light source (not shown) is propagated by an introducing fiber 630 formed by an optical fiber to a vicinity of the near - field optical probe 1000, and focused by a lens 631 provided at a tip of the introducing fiber 630 to the microscopic aperture 5. The introducing fiber 630 having the lens 631 at the tip can be easily fabricated by grinding a tip of a usual optical fiber . With this structure, because the light focused to the microscopic aperture 5 can be introduced, intense near - field light can be emitted from the microscopic aperture 5. Furthermore, because of using the introducing fiber 630 and the lens 631, it is possible to make a microscope objective lens compact and light in weight. Due to this, it is needless to say that, even...the lever.

Also, according to the second embodiment or/and the detecting means from the near - field optical probe, the shade region can be broadened greater than the first embodiment of the invention...

...S/N ratio is to be obtained. Also, by broadening the shade region for the near - field optical probe, it is possible in the scanning probe microscope to obtain an optical image without suffering from affection of leak light even if a spacing is increased between the optical fiber and the lever. Furthermore, where the light incidence means on the near - field optical probe for the scanning probe microscope collects light only by a lens , it is possible to obtain an optical image with high S/N ratio without suffered from leak light even if the lens NA is small. Meanwhile, because generally as the lens NA is smaller the longer the lens focal distance and the deeper the lens focal depth become, making possible to increase the spacing between the near-field probe and the lens . Accordingly, position aligning of the near - field optical probe is facilitated thus simplifying operation of the scanning probe microscope.

Also, according to the...

...CLAIMS said sample, and

a fine movement mechanism for finely moving said sample and/or said near - field optical probe,

wherein introducing/detecting optical system has an optical fiber provided at a tip with a lens function.

26. A method for manufacturing a near-field optical probe, comprising:
a process of...

20/3,K/8 (Item 5 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01273885
OPTICAL HEAD
OPTISCHER KOPF
TETE OPTIQUE

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PATENT (CC, No, Kind, Date): EP 1126449 A1 010822 (Basic)
WO 200116949 010308

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LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200134	536
SPEC A	(English)	200134	5913
Total word count - document A			6449
Total word count - document B			0
Total word count - documents A + B			6449

...SPECIFICATION through 3, a protrusion or a partial sphere is formed either on the in-slider **optical waveguide** or on the in-arm **optical waveguide**, in the optical head 400 shown in the embodiment 4, there exist those members provided on both sides, such as a weighting member 17 formed on the in-arm **optical waveguide** 11 and a weight-receiving member 18 formed on the in-slider **optical waveguide** 7, respectively, and those members are contacting each other. Although those members are shown as...

...the one is a hemisphere and the other is a protrusion. In this case, the **lens** effect of the hemispherical shape is further amplified and more amount of light can be condensed to the minute aperture 8. As the result, since the quantity of **near - field light** generated by the aperture can be increased, more improvement in SN ratio can be expected...

...be realized, by the supply of stable light given by the contact between both the **optical waveguides** and by the effect of light-condensing by a **lens** effect. Also in Fig. 5, the in-arm **optical waveguide** 11 may be formed anywhere of the arm 10, i.e., on top of, in...

DIALOG(R) File 348:EUROPEAN PATENTS
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01211171

OPTICAL MICRO CANTILEVER, METHOD OF MANUFACTURE THEREOF, AND MICRO
CANTILEVER HOLDER

OPTISCHER MIKRO-AUSLEGER, HERSTELLUNGSVERFAHREN FUR EINEN SOLCHEN UND
MIKRO-AUSLEGER-HALTER

MICRO-CHANFREIN OPTIQUE, SON PROCEDE DE FABRICATION ET SON DISPOSITIF DE
RETENUE

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PATENT (CC, No, Kind, Date): EP 1089066 A1 010404 (Basic)
WO 0055597 000921

APPLICATION (CC, No, Date): EP 906740 000306; WO 00JP1361 000306

PRIORITY (CC, No, Date): JP 9972218 990317; JP 3020000400 000217

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LU; MC; NL; PT; SE

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ABSTRACT WORD COUNT: 67

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200114	1527
SPEC A	(English)	200114	12108
Total word count - document A			13635
Total word count - document B			0
Total word count - documents A + B			13635

...SPECIFICATION optical microcantilever 10 while scanning the surface does
not exceed a set value.

Further, propagating light outputted from the light source 509 is
focused by the lens 510 and irradiated to the microscopic aperture via
the optical waveguide of the optical microcantilever 10 so that
near field light is generated in the vicinity of the microscopic
aperture of the optical microcantilever 10. Optical information of the
sample 501 reflected by the prism 502 is focussed by the lens 505 and
guided towards the photodetector 506. The computer 507 receives the signal

from the...1.

In FIG. 17, propagating light generated by a light source (not shown) enters the optical waveguide 2 from the light input/output end 8. The mirror 7 reflects propagating light H propagating from the light input/output end 8 so as to be guided towards the lens 92. The propagating light H is focussed in the vicinity of the microscopic aperture 6 by the lens 92 and near field light is generated in the vicinity of the microscopic aperture 6 by propagating light H attempting to pass through the microscopic aperture 6. With the optical microcantilever 80, light of a high energy density focused by the lens 92 can be guided towards the microscopic aperture 6 and the intensity of near field light irradiated from the microscopic aperture 6 can therefore be made substantial.

This optical microcantilever 90...

20/3,K/10 (Item 7 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

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01137399

RECORDING MEDIUM, INFORMATION RECORDING DEVICE, AND INFORMATION REPRODUCING DEVICE

AUFZEICHNUNGSMEDIUM, INFORMATIONSAUFZEICHNUNGSGERAT SOWIE INFORMATIONSWIEDERGABEGERAT

SUPPORT D'ENREGISTREMENT, DISPOSITIF D'ENREGISTREMENT D'INFORMATIONS ET DISPOSITIF DE REPRODUCTION D'INFORMATIONS

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PATENT (CC, No, Kind, Date): EP 1107238 A1 010613 (Basic)
WO 200008639 000217

APPLICATION (CC, No, Date): EP 99936991 990804; WO 99JP4248 990804

PRIORITY (CC, No, Date): JP 98221933 980805

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE

INTERNATIONAL PATENT CLASS: G11B-007/007; G11B-007/09

ABSTRACT WORD COUNT: 169

NOTE:

Figure number on first page: 001

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200124	1676
SPEC A	(English)	200124	14839
Total word count - document A			16515
Total word count - document B			0
Total word count - documents A + B			16515

...SPECIFICATION 8 introduced from a laser light source (not shown), e.g. several tenth of nanometers. Near - field light 5 is produced in the microscopic aperture 2 by introducing the laser light 8. In...

...in place thereof. For example, it is possible to utilize an probe capable of producing near - field light in an illumination mode as described before, including an optical fiber probe comprising an optical fiber having a microscopic aperture at a tip and coated with metal over a surface and...

...optical probe having at a tip a microscopic aperture to guide laser light through an optical waveguide. However, in this case, there is a need to independently arrange the photo-detector together with an optical lens system in the vicinity of the probe.
The near-field light 5 produced in the...

20/3,K/11 (Item 8 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01079549

OPTICAL PROBE FOR PROXIMITY FIELD

OPTICHE SONDE FUR NAHFELD

SONDE OPTIQUE POUR CHAMP DE PROXIMITE

PATENT ASSIGNEE:

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INVENTOR:

MITSUOKA, Yasuyuki, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
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NIWA, Takashi, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
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LEGAL REPRESENTATIVE:

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PATENT (CC, No, Kind, Date): EP 981051 A1 000223 (Basic)
WO 9940445 990812

APPLICATION (CC, No, Date): EP 99902848 990205; WO 99JP514 990205

PRIORITY (CC, No, Date): JP 9824801 980205

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G01N-037/00

ABSTRACT WORD COUNT: 150

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200008	470
SPEC A	(English)	200008	5406
Total word count - document A			5876
Total word count - document B			0
Total word count - documents A + B			5876

...SPECIFICATION lens positioned immediately in front of the microscopic aperture and adapted for mass production.

A **near - field optical** probe according to the present invention is characterized in that a cantilever is arranged in place of the flat surface substrate to have an **optical waveguide** formed with a microscopic aperture at a projection, the planar **lens** being arranged adapted to a light incident surface of the **optical waveguide**.

Accordingly, the light given from the light source can be efficiently collected to the microscopic...view of a near-field optical probe according to Embodiment 5.

In FIG. 7, an **optical waveguide** for a cantilever type **optical waveguide** probe is arranged in place of the silicon substrate 1 of FIG. 1 explained in Embodiment 1. The **optical waveguide** 13 has a light incident surface on which the planar **microlens** 5 as explained in Embodiment 1 is arranged in contact therewith. The planar **microlens** 5 has a surface emitting laser 4 as a light source arranged on a top surface thereof. This can achieve more intensive light collection and lossless light introduction to the **optical waveguide** as compared to the conventional structure implemented by a usual **lens** optical system, thus efficiently creating a near field in the aperture 3. This case is suited for use as an optical probe for a **near - field optical** microscope rather than use as an optical memory head.

Also, also in a cantilever type...

...generate a near field in the aperture, as in the case of the cantilever type **optical waveguide** probe. This case is also suited for use as an optical probe for a **near - field optical** microscope rather than use as an optical memory head.

Incidentally, in Embodiment 5, the planar...

20/3,K/12 (Item 1 from file: 350)
 DIALOG(R)File 350:Derwent WPIX
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014941050 **Image available**
 WPI Acc No: 2003-001563/200301
 XRPX Acc No: N03-001069

Optical disk drive has microlens formed on surface of near field optical head opposite to surface having minute aperture

Patent Assignee: SEIKO INSTR INC (DASE); KASAMA N (KASA-I); KATO K (KATO-I); MAEDA H (MAED-I); MITSUOKA Y (MITS-I); NIWA T (NIWA-I); OUMI M (OUMI-I); SHINOHARA Y (SHIN-I)

Inventor: KASAMA N; KATO K; MAEDA H; MITSUOKA Y; NIWA T; OUMI M; SHINOHARA Y

Number of Countries: 028 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1233410	A2	20020821	EP 2002251022	A	20020214	200301 B
US 20020114260	A1	20020822	US 200268450	A	20020207	200301
JP 2002245659	A	20020830	JP 200140589	A	20010216	200301

Priority Applications (No Type Date): JP 200140589 A 20010216

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 1233410 A2 E 17 G11B-007/12

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI TR

US 20020114260 A1 G02B-006/26

JP 2002245659 A 11 G11B-007/135

Abstract (Basic):

... A near field optical head (104) has a microlens (205)
formed on the surface of the head opposite to the surface having a
minute aperture (206). A reflection surface (203) formed on end faces
of a rod-like optical waveguide (103), radiates light to the head.

File 344:Chinese Patents Abs Aug 1985-2003/Nov
(c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Sep(Updated 040105)
(c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200402
(c) 2004 Thomson Derwent

? ds

Set	Items	Description
S1	993	NEAR()FIELD() (LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR - SCAN? ? OR SCANNING) OR NFR
S2	235283	OPTIC?(N) (FIBER? ? OR FIBRE? ? OR WAVEGUID? OR WAVE()GUIDE- ?) OR (CORE AND CLAD)
S3	2823	(MINUTE OR MINIATURE OR MICROSCOPIC OR EXTREMELY() (SMALL OR LITTLE)) (3N) (APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S4	71660	(CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR CONCENTE- R? OR CONCENTRING OR CONCENTRE?) (10N) (LIGHT OR OPTIC? OR LASE- R? ?)
S5	309084	MICROLENS??? OR LENS??? OR MICRO()LENS???
S6	712055	REFLECT? OR MIRROR? OR DEFLECT?
S7	6710	INTERNAL? (3N) (REFLECT? OR MIRROR? OR DEFLECT?)
S8	391	(RECORD? OR REPRODUCT? OR REPLICA? OR DUPLICAT?) (S)S1
S9	2	IC=(G02B-006/26 AND G02B-006/42 AND G11B-007/00 AND G11B-0- 07/135)
S10	315	S1 AND IC=(G02B-006/26 OR G02B-006/42 OR G11B-007/00 OR G1- 1B-007/135)
S11	86	S10 AND (S4 OR S5)
S12	10	S11 AND S2
S13	7	S11 AND S3
S14	16	(S12 OR S13)
S15	11	S14 AND S6
S16	11	IDPAT (sorted in duplicate/non-duplicate order)
S17	9	IDPAT (primary/non-duplicate records only)
S18	8	S17 NOT S9
S19	5	S14 NOT S15
S20	5	IDPAT (sorted in duplicate/non-duplicate order)
S21	5	S20 NOT S9
S22	0	S8 AND S2 AND S4 AND S5 AND S7
S23	39	S8 AND S2
S24	1	S23 AND S4
S25	0	S24 NOT (S14 OR S9)
S26	32	S23 NOT (S14 OR S9)
S27	1	S26 AND S5
S28	1	S27 NOT (S14 OR S9)
S29	96734	CONCAVE
S30	2	S8 AND S29
S31	2	S30 NOT (S14 OR S9 OR S28)

9/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014941050 **Image available**
WPI Acc No: 2003-001563/200301
XRPX Acc No: N03-001069

Optical disk drive has microlens formed on surface of near field optical head opposite to surface having minute aperture

Patent Assignee: SEIKO INSTR INC (DASE); KASAMA N (KASA-I); KATO K (KATO-I); MAEDA H (MAED-I); MITSUOKA Y (MITS-I); NIWA T (NIWA-I); OUMI M (OUMI-I); SHINOHARA Y (SHIN-I)

Inventor: KASAMA N; KATO K; MAEDA H; MITSUOKA Y; NIWA T; OUMI M; SHINOHARA Y

Number of Countries: 028 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1233410	A2	20020821	EP 2002251022	A	20020214	200301 B
US 20020114260	A1	20020822	US 200268450	A	20020207	200301
JP 2002245659	A	20020830	JP 200140589	A	20010216	200301

Priority Applications (No Type Date): JP 200140589 A 20010216

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 1233410 A2 E 17 G11B-007/12

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI TR

US 20020114260 A1 G02B-006/26

JP 2002245659 A 11 G11B-007/135

International Patent Class (Main): G02B-006/26 ...

... G11B-007/135

...International Patent Class (Additional): G02B-006/42 ...

... G11B-007/00

9/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

012804673 **Image available**
WPI Acc No: 1999-610903/199952
Related WPI Acc No: 1999-610902; 1999-633652; 2000-013021; 2002-253943
XRAM Acc No: C99-177833
XRPX Acc No: N99-450152

Low noise optical element for optical data storage system

Patent Assignee: SEAGATE TECHNOLOGY INC (SEAG-N); SEAGATE TECHNOLOGY LLC (SEAG-N); GRAY G R (GRAY-I); TSELIKOV A (TSEL-I); WILDE J P (WILD-I); ZHANG Y (ZHAN-I)

Inventor: GRAY G R; TSELIKOV A; WILDE J P; ZHANG Y

Number of Countries: 023 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9950844	A1	19991007	WO 99US7055	A	19990330	199952 B
EP 1066631	A1	20010110	EP 99916222	A	19990330	200103
			WO 99US7055	A	19990330	
CN 1295710	A	20010516	CN 99804652	A	19990330	200146

KR 2001042354	A	20010525	KR 2000710919	A	20000930	200168
US 20020172134	A1	20021121	US 9879903	P	19980330	200279
			US 9888192	P	19980605	
			US 98108398	P	19981113	
			US 98111470	P	19981209	
			US 99283896	A	19990330	
			US 2001938225	A	20010822	
US 6538974	B2	20030325	US 9879903	P	19980330	200325
			US 9888192	P	19980605	
			US 98108398	P	19981113	
			US 98111470	P	19981209	
			US 99283896	A	19990330	
			US 2001938225	A	20010822	
JP 2003522362	W	20030722	WO 99US7055	A	19990330	200350
			JP 2000541681	A	19990330	
KR 381936	B	20030426	WO 99US7055	A	19990330	200355
			KR 2000710919	A	20000930	

Priority Applications (No Type Date): US 99283896 A 19990330; US 9879903 P 19980330; US 9888192 P 19980605; US 98108398 P 19981113; US 98111470 P 19981209; US 2001938225 A 20010822

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9950844	A1	E	58	G11B-007/135	
Designated States (National): CN JP KR SG					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
EP 1066631	A1	E		G11B-007/135	Based on patent WO 9950844
Designated States (Regional): DE GB					
CN 1295710	A			G11B-007/135	
KR 2001042354	A			G11B-007/135	
US 20020172134	A1			G02B-006/26	Provisional application US 9879903

					Provisional application US 9888192
					Provisional application US 98108398
					Provisional application US 98111470
					Div ex application US 99283896
US 6538974	B2			G11B-007/00	Provisional application US 9879903
					Provisional application US 9888192
					Provisional application US 98108398
					Provisional application US 98111470
					Div ex application US 99283896
JP 2003522362	W		77	G11B-007/135	Based on patent WO 9950844
KR 381936	B			G11B-007/135	Previous Publ. patent KR 2001042354
					Based on patent WO 9950844

International Patent Class (Main): G02B-006/26 ...

... G11B-007/00 ...

... G11B-007/135

International Patent Class (Additional): G02B-006/42 ...

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18/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
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07621269 **Image available**
INFORMATION RECORDING/REPRODUCING DEVICE, OPTICAL SYSTEM AND OPTICAL
ELEMENT

PUB. NO.: 2003-115120 [JP 2003115120 A]
PUBLISHED: April 18, 2003 (20030418)
INVENTOR(s): HATANO HIROSHI
OGURA KAZUYUKI
APPLICANT(s): MINOLTA CO LTD
APPL. NO.: 2001-305097 [JP 20011305097]
FILED: October 01, 2001 (20011001)

INTL CLASS: G11B-007/09; G11B-007/004; G11B-007/135

ABSTRACT

...and optical element suitable therefor.

SOLUTION: A recording/reproducing light DL is converged on a minute opening 19H which is formed on a thin film 19 located at an almost center of a flat surface part 18U of an immersion lens SIL formed by a medium having the high refractive index, to generate a near - field light NP1 for the recording/ reproducing operation, then minute recording pits DP are formed on land...

... that of a spot of the recording/reproducing light DL. Tracking light TL is totally reflected at the position where no thin film 19 exists in the flat surface part 18U, being the nearest position to the minute opening 19H. Then a tracking spot TS over the groove part 20G is made to be minute for generating a near - field light NP2 for tracking, and the recording/reproducing position becomes near to the tracking position in...

18/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

06578003 **Image available**
OPTICAL HEAD, DISK DEVICE, AND MANUFACTURE OF OPTICAL HEAD

PUB. NO.: 2000-163794 [JP 2000163794 A]
PUBLISHED: June 16, 2000 (20000616)
INVENTOR(s): KAMIYANAGI KIICHI
APPLICANT(s): FUJI XEROX CO LTD
APPL. NO.: 11-125205 [JP 99125205]
FILED: April 30, 1999 (19990430)
PRIORITY: 10-126528 [JP 98126528], JP (Japan), May 08, 1998 (19980508)
10-268014 [JP 98268014], JP (Japan), September 22, 1998
(19980922)

INTL CLASS: G11B-007/135 ; G01N-013/14; G01N-013/10; G02B-013/00;
G11B-007/22

ABSTRACT

...2, the laser beam 2a is shaped into a parallel beam 2b by a collimator lens 3, and is reflected a mirror 4 before converged by an object

lens 5, and then made incident on a plane of incidence 6a of a transparent medium...

... condensed on a plane 6b for condensation, and a light spot 9 is formed, and near field light 10 seeps out of a minute hole 7a in the direction orthogonal to a recording track. The near field light seeping out of the minute hole 7a is made incident to a recording film 8a of a recording medium 8 as...

18/3,K/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

06578002 **Image available**
OPTICAL HEAD, DISK DEVICE, AND MANUFACTURE OF OPTICAL HEAD

PUB. NO.: 2000-163793 [JP 2000163793 A]
PUBLISHED: June 16, 2000 (20000616)
INVENTOR(s): KAMIYANAGI KIICHI
BABA KAZUO
APPLICANT(s): FUJI XEROX CO LTD
APPL. NO.: 11-072783 [JP 9972783]
FILED: March 17, 1999 (19990317)
PRIORITY: 10-070501 [JP 9870501], JP (Japan), March 19, 1998 (19980319)
10-267656 [JP 98267656], JP (Japan), September 22, 1998
(19980922)

INTL CLASS: G11B-007/135 ; G01N-013/10; G02B-003/00; G11B-007/22

ABSTRACT

...2, the laser beam 2a is shaped into a parallel beam 2b by a collimator lens 3, and is reflected on a mirror 4 before converged by an object lens 5, and then made incident on a plane of incidence 6a of a transparent medium...

... condensed on a plane 6b for condensation, and a light spot 9 is formed, and near field light 10 seeps out of a minute hole 7a. The near field light seeping out of the minute hole 7a is made incident to a recording film 8a of a recording medium 8 as...

18/3,K/4 (Item 4 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

04899680 **Image available**
NEAR - FIELD OPTICAL SCAN RECORDING AND REPRODUCING DEVICE

PUB. NO.: 07-192280 [JP 7192280 A]
PUBLISHED: July 28, 1995 (19950728)
INVENTOR(s): KIYOMATSU SATOSHI
KOJIMA KOKI
KONO HARUHIKO
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-336636 [JP 93336636]
FILED: December 28, 1993 (19931228)

NEAR - FIELD OPTICAL SCAN RECORDING AND REPRODUCING DEVICE

INTL CLASS: G11B-007/09; G02B-027/56; G11B-007/00 ; G11B-007/135

JAPIO KEYWORD:R002 (LASERS); R009 (HOLOGRAPHY); R012 (OPTICAL FIBERS);
R102 (APPLIED ELECTRONICS...

ABSTRACT

...CONSTITUTION: Laser beams radiated from a semiconductor laser 1 are converged by a lens 6 and applied through an opening 8 to an optical fiber . A scanning head 9 formed at the head part of the tip of the optical fiber 7 is provided with an opening 10, of which diameter is equal or smaller than...

...end face and a recording plane 11 is moved relatively to the opening 10. The reflected light extracted from the recording plane 11 through a scanning head 9 is detected by...

... head 9 is provided with a semiconductor laser 15 as its own original light source, lens system and optic/electric converting element 19 and generates a tracking error detect signal for...

18/3,K/5 (Item 5 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

04899668 **Image available**

NEAR FIELD LIGHT SCANNING RECORDING AND REPRODUCING DEVICE

PUB. NO.: 07-192268 [JP 7192268 A]

PUBLISHED: July 28, 1995 (19950728)

INVENTOR(s): KIYOMATSU SATOSHI

KONO HARUHIKO

KOJIMA KOKI

APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 05-336635 [JP 93336635]

FILED: December 28, 1993 (19931228)

NEAR FIELD LIGHT SCANNING RECORDING AND REPRODUCING DEVICE

INTL CLASS: G11B-007/00 ; G02B-027/56; G11B-007/135

JAPIO KEYWORD:R002 (LASERS); R009 (HOLOGRAPHY); R012 (OPTICAL FIBERS);
R102 (APPLIED ELECTRONICS...

ABSTRACT

... beams radiated from a semiconductor laser 1 are converted into parallel beams by a collimator lens 6 and projected to a translucent recording medium 8. The recording medium 8 fully reflects the introduced parallel beams at an incident angle less than 45 deg. respectively on a...

... light generated on the face 8b is fetched into a scanning probe 11 composed of optical fibers . A fine opening 13 provided on the tip face of the scanning probe 11 optically...

18/3,K/6 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

015258639 **Image available**

WPI Acc No: 2003-319568/200331

XRPX Acc No: N03-254807

Information recording and reproducing apparatus for high density
recording and reproduction of information has optical head which
irradiates beam even small beam are reflected by reflecting surfaces
Patent Assignee: SEIKO INSTR INC (DASE)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2003022560	A	20030124	JP 2001208398	A	20010709	200331 B

Priority Applications (No Type Date): JP 2001208398 A 20010709

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2003022560	A		10	G11B-007/135	

... recording and reproduction of information has optical head which
irradiates beam even small beam are reflected by reflecting surfaces

Abstract (Basic):

... A lens function is formed on the surface of an optical head
(104) different from a surface where a micro opening (206) is formed.
Two reflecting surfaces are formed to an optical waveguide (103)
with a core end face (203) at the middle. The optical head irradiates
beam even if small beam emitted from the core end face is reflected
by the reflecting surfaces.
... to micro opening. Weight of optical head is reduced. Cost
reduction is attained. Generates strong near - field light on micro
opening periphery...

...The figure shows the explanatory diagram of the optical head and
optical waveguide of the apparatus...

... Optical waveguide (103

...Title Terms: REFLECT ;

International Patent Class (Main): G11B-007/135

18/3,K/7 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014417182 **Image available**
WPI Acc No: 2002-237885/200229
XRPX Acc No: N02-183152

Near-field head for optical disk capable of generating intensive and
constant light

Patent Assignee: SEIKO INSTR INC (DASE); KASAMA N (KASA-I); KATO K
(KATO-I); MAEDA H (MAED-I); MITSUOKA Y (MITS-I); NIWA T (NIWA-I); OUMI M
(OUMI-I); SHINOHARA Y (SHIN-I)

Inventor: KASAMA N; KATO K; MAEDA H; MITSUOKA Y; NIWA T; OUMI M; SHINOHARA
Y

Number of Countries: 028 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20010033529	A1	20011025	US 2001833147	A	20010411	200229 B
JP 2001307348	A	20011102	JP 2000119753	A	20000420	200229
EP 1150286	A2	20011031	EP 2001303370	A	20010410	200229

Priority Applications (No Type Date): JP 2000119753 A 20000420

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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US 20010033529 A1 18 G11B-007/95
JP 2001307348 A 12 G11B-007/09
EP 1150286 A2 E G11B-007/12
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI TR

Abstract (Basic):

... The head condenses the light from the source and irradiates it on the minute opening. Then the reflected light from the light condensing mark which is provided on the circumference of the minute opening is detected. The relative position between the light condensing point condensed by the lens and the light condensing mark (501) is detected so that the light condensing point is controlled to follow the light condensing mark. Generating intensive and constant near - field light ..
... noise ratio can be obtained. This can be obtained even when rapid scanning of the minute opening over the recording medium...

...The drawing shows a block diagram of the near - field optical head

...International Patent Class (Additional): G11B-007/135

18/3,K/8 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

010476707 **Image available**

WPI Acc No: 1995-378028/199549

Near field optical recording and reproduction apparatus - generates light beam using semiconductor laser with collimator lenses which are 1/4 wavelengths apart and optical fibre set at focus of condensing lens

Patent Assignee: MATSUSHITA DENKI SANGYO KK (MATU)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 7254185	A	19951003	JP 9445680	A	19940316	199549 B

Priority Applications (No Type Date): JP 9445680 A 19940316

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 7254185	A		6	G11B-011/10	

Near field optical recording and reproduction apparatus...

...generates light beam using semiconductor laser with collimator lenses which are 1/4 wavelengths apart and optical fibre set at focus of condensing lens

...Abstract (Basic): external resonance circuit. The circuit consists of an optomagnetic recording medium (18) and a half mirror (21). A generator (17) generates and concentrates light from a small area in the edge of optical system onto the optomagnetic recording medium. A collimator lens is set in both sides of the semiconductor laser to provide light. The semiconductor laser and the collimator lens are 1/4 wavelength apart...

...The collimator lens and a condensing lens are set individually. One side of the half mirror is set at the focus position with the

condensing lens . The conversion lens converts light which penetrates half mirror into parallel light. A separator unit separates the light converted by conversion lens into two polarised light beams. The detector unit detects the light separated by separation circuit. The optical fibre is set at focus position with condensing lens .

...Title Terms: LENS ;
International Patent Class (Additional): G11B-007/135
?

21/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

07723271 **Image available**
RECORDING MEDIUM, OPTICAL PROBE AND INFORMATION RECORDING AND REPRODUCING
DEVICE

PUB. NO.: 2003-217172 [JP 2003217172 A]
PUBLISHED: July 31, 2003 (20030731)
INVENTOR(s): TAKAHASHI JUNICHI
TOYOSHIMA NOBUAKI
MIURA HIROSHI
APPLICANT(s): RICOH CO LTD
APPL. NO.: 2002-011252 [JP 200211252]
FILED: January 21, 2002 (20020121)

INTL CLASS: G11B-007/24; G11B-007/007; G11B-007/09; G11B-007/135

ABSTRACT

... in the direction parallel to the direction of a data row. An electric field by near field light generated at a minute aperture 11 at the tip of the optical probe 8 by irradiating the optical probe 8 with a laser beam is focused on the stripes 22 with low resistance or the dots 41 with low resistance, the...

21/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
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07591946 **Image available**
OPTICAL ELEMENT, OPTICAL SYSTEM, AND INFORMATION RECORDING AND REPRODUCING
DEVICE

PUB. NO.: 2003-085790 [JP 2003085790 A]
PUBLISHED: March 20, 2003 (20030320)
INVENTOR(s): HATANO HIROSHI
OGURA KAZUYUKI
SAKATA TADAFUMI
APPLICANT(s): MINOLTA CO LTD
APPL. NO.: 2001-275148 [JP 20011275148]
FILED: September 11, 2001 (20010911)

INTL CLASS: G11B-007/09; G11B-007/135

ABSTRACT

...information recording and reproducing device.

SOLUTION: Recording and reproducing light DL is converged on a minute aperture 19H formed in a thin film 19, which is provided in an approximate center part of a plane part 18U of a lens SIL made of a medium having a high refractive index, to generate near - field light NP, and a minute recording pit DP is formed on a land part 20L. The...

...where the thin film 19 is not provided and which is as close to the minute aperture 19H as possible, and a tracking spot TS is formed on the groove part 20G...

21/3,K/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015270462 **Image available**
WPI Acc No: 2003-331391/200331
XRPX Acc No: N03-265489

Self-aligning package for micro-optical electromechanical device, has package frame with V-grooves to align optical interconnect with die having micro-mechanical devices, when frame and die engage mutually

Patent Assignee: 3M INNOVATIVE PROPERTIES CO (MINN)

Inventor: CARPENTER B S

Number of Countries: 100 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030021541	A1	20030130	US 2001911951	A	20010724	200331 B
WO 200310087	A2	20030206	WO 2002US19170	A	20020611	200331

Priority Applications (No Type Date): US 2001911951 A 20010724

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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US 20030021541	A1		14	G02B-006/26	
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WO 200310087	A2	E		B81B-007/00	
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Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA
CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN
IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ
OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA
ZM ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW

Abstract (Basic):

... surface (26) of the frame includes V-grooves (29) to align optical interconnect such as optical fiber with the aperture and the die, when the reference surfaces of the frame and the...
... data storage devices, laser scanners, printer heads, magnetic heads, micro-spectrometer, accelerometers, scanning-probe microscopes, near - field optical microscopes, optical scanners, optical modulators, micro lenses , optical switches, micro-robotic, wavelengths specific equalizer, polarization mode dispersion compensators, etc., and also for...

...The self-aligning package stably and efficiently aligns optical interconnects such as optical fiber and/or lens with optical micro-mechanical devices. Hence physical damage during handling or operation of the MOEMS...

...International Patent Class (Main): G02B-006/26

21/3,K/4 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014951954 **Image available**
WPI Acc No: 2003-012467/200301

Micro near - field optical data storage head using sil
Patent Assignee: KOREA ELECTRONICS & TELECOM RES INST (KOEL-N)
Inventor: BAEK M C; CHO G I; HAN G P; KIM T Y; SON Y J
Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
KR 2002051213	A	20020628	KR 200080801	A	20001222	200301 B

Priority Applications (No Type Date): KR 200080801 A 20001222

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2002051213	A		1	G11B-007/135	

Micro near - field optical data storage head using sil

Abstract (Basic):

... A micro near - field optical data storage head using an
 SIL(Solid Immersion Lens) is provided to use the SIL for a big size
 lens , and to use diffraction elements for the rest parts, thereby
 minimizing the size.

... An optical waveguide (201) has a plane shape. At least more
 than one condensing diffraction grating(203) is attached to one of both
 sides of the optical waveguide , and changes a path of an incident
 light(202) to an SIL(205). More than...

...light(209). The SIL is composed of a curved part and a plane part, and
 concentrates the incident light on one point of the plane part. A
 coil(206) is attached to an option...

International Patent Class (Main): G11B-007/135

21/3,K/5 (Item 3 from file: 350)
 DIALOG(R)File 350:Derwent WPIX
 (c) 2004 Thomson Derwent. All rts. reserv.

009659378 **Image available**
 WPI Acc No: 1993-352929/199345
 XRPX Acc No: N93-272235

High density optical data storage unit for electronic information - has
 read-write arrangement with diffraction-limited optical elements and
 second portion with near - field optical elements

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
 Inventor: POHL W; POHL W D
 Number of Countries: 001 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 568753	A1	19931110	EP 92810334	A	19920507	199345 B
US 5461600	A	19951024	US 92978015	A	19921118	199548
			US 94311823	A	19940922	
US 5598387	A	19970128	US 92978015	A	19921118	199710
			US 94311823	A	19940922	
			US 95484245	A	19950607	

Priority Applications (No Type Date): EP 92810334 A 19920507

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 568753	A1	E	14	G11B-007/00	
US 5461600	A		10	G11B-007/135	Cont of application US 92978015
US 5598387	A		11	G11B-007/135	Cont of application US 92978015
					Div ex application US 94311823
					Div ex patent US 5461600

... has read-write arrangement with diffraction-limited optical elements
 and second portion with near - field optical elements

...Abstract (Basic): elements (8..14) for addressing any selected one of the cells. A second portion comprises **near - field optical** elements (15..17) for selecting anyone of the bit areas within the respective addressed storage...

...Abstract (Equivalent): a plurality of **near field optical** elements each having a diameter in the range of 10-100 nanometers, each located proximate...

... an interrogation light source for providing light to the **near field optical elements** ; and

...a plurality of diffraction limited optical elements, each associated with one of the **near field optical** elements, each optical element for receiving particularly scattered light from its associated **near field optical** element.

...overlying the probe substrate, a light transparent layer overlying the semiconductor diodes, a plurality of **micro lenses** each directly overlying an associated one of the semiconductor diodes, an **optical waveguide** overlying the plurality of **micro lenses** , a semitransparent layer overlying the **optical waveguide** layer, and a plurality of **near field optical** protrusions having a diameter in the range of 10-100 nanometer attached to the semitransparent layer, each **near field optical** protrusion directly overlying an associated one of the semiconductor diodes, the probe assembly being located...

...an interrogation light source in optical communication with the **optical waveguide** layer for providing light to the protrusions such that particularly scattered light is received at
International Patent Class (Main): **G11B-007/00** ...

... **G11B-007/135**

?

28/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014408644 **Image available**

WPI Acc No: 2002-229347/200229

XRPX Acc No: N02-176322

Recording and reading apparatus, for high density information, using
near - field light with very small opening and waveguide on same side
of near - field light head.

Patent Assignee: LUCENT TECHNOLOGIES INC (LUCE)

Inventor: CURTIS K R; TACKITT M C

Number of Countries: 028 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1148478	A1	20011024	EP 2000309804	A	20001106	200229 B
JP 2002006723	A	20020111	JP 2001111421	A	20010410	200229
US 6388779	B1	20020514	US 2000553512	A	20000420	200239

Priority Applications (No Type Date): US 2000553512 A 20000420

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
-----------	------	-----	----	----------	--------------

EP 1148478	A1	E	21	G11B-007/0065	
------------	----	---	----	---------------	--

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI TR

JP 2002006723	A	6	G03H-001/04
---------------	---	---	-------------

US 6388779	B1		G03H-001/16
------------	----	--	-------------

Recording and reading apparatus, for high density information, using
near - field light with very small opening and waveguide on same side
of near - field light head

Abstract (Basic):

... 110) is fixed to the front end of a suspension arm (109) to
float the near - field light head (106) with an optical coupling
and a very small opening over the rotatable record medium (107). An
optical receiving portion with a suspension arm (111) has a light
receiving...

...with a very small opening and a waveguide disposed on the same side of
the near - field light head.

... light guide with an optical propagator guides light flux of a
laser (101) with a lens (102) and an optical fibre (103) that
points through a lens (104) to a mirror (105). The optical propagator
may have a prism, a diffraction grating or optical wave guides
laminated to overlap by two or more stages...

...Because a large amount of near - field light is generated at the
very small opening of the near - field light head, reproduction
and recording of information with ultra high resolution, high speed
and high SN ratio is made. It is not necessary to fabricate a clad
portion of the optical wave guide, and parts are reduced using
the fraction grating and prism, so the fabrication process is
simplified and cost is reduced. The mass at a surrounding of the near
- field light head is lightened using a prism...

...perspective view of the information recording and reproduction
apparatus. suspension arms (109, 111)flexure (110) near - field light
head (106) record medium (107)light receiving head (108...

?

31/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014217520 **Image available**
WPI Acc No: 2002-038218/200205

Device for reproducing near - field optical recording
Patent Assignee: LG ELECTRONICS INC (GLDS)
Inventor: KIM S G; SONG I S
Number of Countries: 001 Number of Patents: 001
Patent Family:
Patent No Kind Date Applicat No Kind Date Week
KR 2001053683 A 20010702 KR 9954148 A 19991201 200205 B

Priority Applications (No Type Date): KR 9954148 A 19991201
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
KR 2001053683 A 1 G11B-007/09

Device for reproducing near - field optical recording

Abstract (Basic):

... A reproducing device for a near - field optical recording
is provided to maintain a gap between an optical head and a disk in a
...
... gap between a disk and a solid immersion lens(3), a beam
reflected on a concave portion of a lens formed within a critical
angle of a first object lens(1...
...an unstable movement of an optical head assembly by unstable state of a
drive, the concave portion of the lens is moved for a distance of h.
Then, a defocus is...

31/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014122685 **Image available**
WPI Acc No: 2001-606897/200169
XRPX Acc No: N01-453007

Optical head for optical recording /reproducing apparatus, has beam
shaper that shapes incident laser beam into toroidal beam and directs
shaped beam to solid immersion mirror generating near - field light
Patent Assignee: MINOLTA CAMERA KK (MIOC); HATANO H (HATA-I); OGURA K
(OGUR-I); SATO A (SATO-I); SUZUKI Y (SUZU-I)
Inventor: HATANO H; OGURA K; SATO A; SUZUKI Y
Number of Countries: 002 Number of Patents: 002
Patent Family:
Patent No Kind Date Applicat No Kind Date Week
US 20010017838 A1 20010830 US 2001770203 A 20010129 200169 B
JP 2001236673 A 20010831 JP 200039522 A 20000217 200169

Priority Applications (No Type Date): JP 200039522 A 20000217
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
US 20010017838 A1 12 G11B-007/135
JP 2001236673 A 6 G11B-007/135

Optical head for optical recording /reproducing apparatus, has beam

shaper that shapes incident laser beam into toroidal beam and directs shaped beam to solid immersion mirror generating near - field light

Abstract (Basic):

... 10) has a beam shaper (11) that includes two axicon lenses coaxially disposed, so that concave and convex conical surfaces oppose each other. The beam shaper shapes incident laser beam (L...

?

File 2:INSPEC 1969-2003/Dec W2
(c) 2003 Institution of Electrical Engineers
File 6:NTIS 1964-2004/Jan W1
(c) 2004 NTIS, Intl Cpyrght All Rights Res
File 8:EI Compendex(R) 1970-2004/Dec W4
(c) 2004 Elsevier Eng. Info. Inc.
File 34:SciSearch(R) Cited Ref Sci 1990-2003/Dec W4
(c) 2003 Inst for Sci Info
File 35:Dissertation Abs Online 1861-2003/Nov
(c) 2003 ProQuest Info&Learning
File 62:SPIN(R) 1975-2004/Nov W3
(c) 2004 American Institute of Physics
File 65:Inside Conferences 1993-2004/Jan W1
(c) 2004 BLDSC all rts. reserv.
File 94:JICST-EPlus 1985-2004/Dec W4
(c)2004 Japan Science and Tech Corp(JST)
File 95:TEME-Technology & Management 1989-2004/Dec W3
(c) 2004 FIZ TECHNIK
File 99:Wilson Appl. Sci & Tech Abs 1983-2003/Nov
(c) 2003 The HW Wilson Co.
File 144:Pascal 1973-2003/Dec W2
(c) 2003 INIST/CNRS
File 239:Mathsci 1940-2003/Feb
(c) 2003 American Mathematical Society
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
(c) 1998 Inst for Sci Info
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
(c) 2002 The Gale Group
File 603:Newspaper Abstracts 1984-1988
(c)2001 ProQuest Info&Learning
File 483:Newspaper Abs Daily 1986-2004/Jan 07
(c) 2004 ProQuest Info&Learning
File 248:PIRA 1975-2003/Dec W3
(c) 2003 Pira International
? ds

Set	Items	Description
S1	15129	NEAR()FIELD() (LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR - SCAN? ? OR SCANNING) OR NFR
S2	441342	OPTIC?(N) (FIBER? ? OR FIBRE? ? OR WAVEGUID? OR WAVE()GUIDE- ?) OR (CORE AND CLAD)
S3	1448	(MINUTE OR MINIATURE OR MICROSCOPIC OR EXTREMELY() (SMALL OR LITTLE)) (3N) (APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S4	152675	(CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR CONCENTE- R? OR CONCENTRING OR CONCENTRE?) (10N) (LIGHT OR OPTIC? OR LASE- R? ?)
S5	252940	MICROLENS??? OR LENS??? OR MICRO()LENS???
S6	1710449	REFLECT? OR MIRROR? OR DEFLECT?
S7	21049	INTERNAL?(3N) (REFLECT? OR MIRROR? OR DEFLECT?)
S8	1147	(RECORD? OR REPRODUCT? OR REPLICA? OR DUPLICAT?) (S)S1
S9	39	AU=(KASAMA N? OR KASAMA, N?)
S10	3011	AU=(SHINOHARA, Y? OR SHINOHARA Y?)
S11	13125	AU=(MAEDA H? OR MAEDA, H?)
S12	205	AU=(MITSUOKA, Y? OR MITSUOKA Y?)
S13	302	AU=(OUMI M? OR OUMI, M?)
S14	28494	AU=(KATO, K? OR KATO K?)
S15	2407	AU=(NIWA T? OR NIWA, T?)
S16	23	(S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15) AND S1 AND -
	S8	
S17	11	RD S16 (unique items)
S18	8	S17 NOT PY>2002

S19	1	S18 AND S4
S20	7	S18 NOT S19
S21	2	S20 AND (S5 OR S6 OR S7 OR S2 OR S3)
S22	5	S20 NOT S21
S23	0	S8 AND S2 AND S3 AND S4 AND S5 AND S7
S24	0	S8 AND S2 AND S3 AND S4 AND S5
S25	0	S1 AND S2 AND S3 AND S4 AND S5
S26	19	S1 AND S2 AND S3
S27	0	S26 AND (S4 OR S5)
S28	0	S26 AND S8
S29	229	S8 AND (S4 OR S5)
S30	15	S29 AND S2
S31	986264	(APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S32	12	S30 AND S31
S33	9	RD S32 (unique items)
S34	5	S33 NOT PY>2002
S35	4	S34 NOT S18
S36	3	S30 NOT S32
S37	3	S36 NOT (S18 OR PY>2002)
S38	3	RD S37 (unique items)

19/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

7492332 INSPEC Abstract Number: A2003-03-4280T-057, B2003-02-4120-080,
C2003-02-5320K-046

Title: High-speed readout using small near - field optical head module
with horizontal light introduction through optical fiber

Author(s): Kato, K. ; Ichihara, S. ; Maeda, H. ; Oumi, M. ; Niwa, T. ;
Mitsuoka, Y. ; Nakajima, K. ; Ohkubo, T. ; Itao, K.

Author Affiliation: Seiko Instrum. Inc., Chiba, Japan

Conference Title: 2002 International Symposium on Optical Memory and
Optical Data Storage Topical Meeting. Joint International Symposium.
Technical Digest (Cat.No.02EX552) p.198-200

Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 2002 Country of Publication: USA (xiii+439+ii+70
suppl.) pp.

ISBN: 0 7803 7379 0 Material Identity Number: XX-2002-02643

U.S. Copyright Clearance Center Code: 0-7803-7379-0/02/\$17.00

Conference Title: 2002 International Symposium on Optical Memory and
Optical Data Storage Topical Meeting. Joint International Symposium on
Optical Memory and Optical Data Storage 2002. Technical Digest

Conference Sponsor: IEEE/Lasers & Electro-Opt. Soc.; OSA - Opt. Soc.
America; SPIE - Int. Soc. Opt. Eng.; JSAP - Japan Soc. Appl. Phys.; MSJ -
Magnetics Soc. Japan; OITDA - Optoelectron. Ind. & Technol. Dev. Assoc.;
IEICE; Chemical Soc. Japan; Inf. Process. Soc. Japan; Inst. Electr. Eng.
Japan; Inst. Image Inf. & Telev. Eng.; Japan Soc. Precision Eng.; Laser
Soc. Japan

Conference Date: 7-11 July 2002 Conference Location: Waikoloa, HI, USA

Language: English

Subfile: A B C

Copyright 2003, IEE

Title: High-speed readout using small near - field optical head module
with horizontal light introduction through optical fiber

Author(s): Kato, K. ; Ichihara, S. ; Maeda, H. ; Oumi, M. ; Niwa, T. ;
Mitsuoka, Y. ; Nakajima, K. ; Ohkubo, T. ; Itao, K.

Abstract: Near - field optics , a super-resolution technique, is
expected for optical data storage with high recording density (E. Betzig
et al., Appl. Phys. Lett. vol. 61, p. 142, 1992; S. Hosaka et al,
Nanotechnology vol. 8, p. A58, 1997). Recently, near - field optical
heads using sliders, which can keep the distance between an aperture and a
medium surface...

... 1279, 2000). These optical heads use an objective lens above sliders
separately, to introduce the focused light to the aperture. However,
this large light introduction using the objective lens leads optical
heads with actuators to be large. From this perspective, we had proposed a
small near - field optical head module with miniaturized light
introduction (K. Kato et al., Tech. Dig. ISOM2000, p. 188...

...Descriptors: optical focusing

...Identifiers: small near - field optical head module...

... near - field optics ; ...

... focused light introduction

?

21/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

5251030 INSPEC Abstract Number: A9611-0760P-003
Title: Optical processing and recording by scanning near - field
optic /atomic-force microscope (SNOAM)
Author(s): Nakajima, K.; Mitsuoka, Y. ; Chiba, N.; Muramatsu, H.; Ataka,
T.; Fujihira, M.
Author Affiliation: Res. Lab. for Adv. Technol., Seiko Instrum. Inc.,
Chiba, Japan
Journal: Proceedings of the SPIE - The International Society for Optical
Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)
vol.2535 p.16-27
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1995 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1995)2535L:16:OPRS;1-6
Material Identity Number: C574-95219
U.S. Copyright Clearance Center Code: 0 8194 1894 3/95/\$6.00
Conference Title: Near-Field Optics
Conference Sponsor: SPIE
Conference Date: 9-10 July 1995 Conference Location: San Diego, CA,
USA
Language: English
Subfile: A
Copyright 1996, IEE

Title: Optical processing and recording by scanning near - field
optic /atomic-force microscope (SNOAM)
Author(s): Nakajima, K.; Mitsuoka, Y. ; Chiba, N.; Muramatsu, H.; Ataka,
T.; Fujihira, M.
Abstract: The paper describes the design and applications to optical
processing and recording of a Scanning Near - field Optic /Atomic-force
Microscope (SNOAM). A sharpened and bent optical fiber was used as a
near - field optical probe as well as an atomic force microscope probe
in a vertical vibrating mode. SNOAM...
...Descriptors: optical fibres ;
Identifiers: scanning near - field optic /atomic-force microscope...
... optical fiber ; ...
... near - field optical probe

21/3,K/2 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus
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04044961 JICST ACCESSION NUMBER: 99A0267413 FILE SEGMENT: JICST-E
Magneto-optical Imaging by Scanning Near - field Optical Microscope
Using Polarization Modulation Technique..
ISHIBASHI T (1); YOSHIDA T (1); YAMAMOTO J (1); SATO K (1); MITSUOKA Y
(2); NAKAJIMA K (2)
(1) Tokyo Univ. Agriculture And Technol., Tokyo, Jpn; (2) Seiko Instruments
Inc., Chiba, Jpn
Nippon Oyo Jiki Gakkaishi (Journal of the Magnetism Society of Japan), 1999
, VOL.23,NO.1-2, PAGE.712-714, FIG.4, REF.9
JOURNAL NUMBER: Z0944AAE ISSN NO: 0285-0192
UNIVERSAL DECIMAL CLASSIFICATION: 535.097/.098 681.72/.75

LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

**Magneto-optical Imaging by Scanning Near - field Optical Microscope
Using Polarization Modulation Technique.**

; MITSUOKA Y (2); NAKAJIMA K (2)

ABSTRACT: A polarization modulation technique has been applied to a scanning near - field optical microscope (SNOM), in order to improve sensitivity and resolution of a magneto-optical (MO) imaging. Polarized light modulated by a photoelastic modulator (PEM) was introduced into a bent-type optical fiber probe operated as an AFM cantilever, and transmitted MO signals were detected using a lock...

...ion laser (488nm) was used as a light source. By using this technique, images of recorded marks on a Pt/Co disk were successfully obtained, which were written by a magnetic...

?

22/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
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7296621 INSPEC Abstract Number: A2002-15-4280T-002, B2002-07-4120-020
Title: Simulation of simultaneous tracking/data signal detection using novel aperture-mounted surface recording head
Author(s): Tanaka, K.; Ohkubo, T.; Oumi, M. ; Mitsuoka, Y. ; Nakajima, K.; Hosaka, H.; Itao, K.
Author Affiliation: Graduate Sch. of Frontier Sci., Univ. of Tokyo, Japan
Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) vol.41, no.3B p.1628-31
Publisher: Japan Soc. Appl. Phys,
Publication Date: March 2002 Country of Publication: Japan
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200203)41:3BL;1628:SSTD;1-9
Material Identity Number: F221-2002-007
Language: English
Subfile: A B
Copyright 2002, IEE

Author(s): Tanaka, K.; Ohkubo, T.; Oumi, M. ; Mitsuoka, Y. ; Nakajima, K.; Hosaka, H.; Itao, K.
Abstract: Recently, near-field surface recording based on near - field optical principles has been vigorously studied for higher data storage density. In near - field optics which utilizes an aperture, in addition to the high spatial resolution property, there is another...
...Identifiers: near - field optical principles...

... near - field optical head

22/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

6926273 INSPEC Abstract Number: A2001-12-4280T-006, B2001-06-4120-021, C2001-06-5320K-022
Title: Numerical simulation on read-out characteristics of the planar aperture-mounted head with a minute scatterer
Author(s): Tanaka, K.; Ohkubo, T.; Oumi, M. ; Mitsuoka, Y. ; Nakajima, K.; Hosaka, H.; Itao, K.
Author Affiliation: Graduate Sch. of Frontier Sci., Tokyo Univ., Japan
Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) Conference Title: Jpn. J. Appl. Phys. 1, Regul. Pap. Short Notes Rev. Pap. (Japan) vol.40, no.3B p.1542-7
Publisher: Japan Soc. Appl. Phys,
Publication Date: March 2001 Country of Publication: Japan
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200103)40:3BL;1542:NSRC;1-H
Material Identity Number: F221-2001-007
Conference Title: 10th International Symposium on Optical Memory 2000 (ISOM 2000)
Conference Sponsor: Japan Soc. Appl. Phys.; Magnetics Soc. Japan; Optoelectron. Ind. & Technol. Dev. Assoc
Conference Date: 5-8 Sept. 2000 Conference Location: Hokkaido, Japan
Language: English
Subfile: A B C
Copyright 2001, IEE

Author(s): Tanaka, K.; Ohkubo, T.; Oumi, M. ; Mitsuoka, Y. ; Nakajima, K.; Hosaka, H.; Itao, K.

Abstract: Recently, various researches on optical recording based on near - field optical principles have been conducted for higher data storage density. However, there is a problem of the trade-off between signal output and spatial resolution, especially when an aperture-type near - field optical head is utilized for high speed data-readout. In order to solve this problem, we propose a novel near - field optical head, the planar aperture-mounted head with a minute scatterer, and analyze its read-out...

...Identifiers: near - field optical principles...

...aperture-type near - field optical head

22/3,K/3 (Item 1 from file: 62)

DIALOG(R)File 62:SPIN(R)

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00996783

Simulation of Simultaneous Tracking/Data Signal Detection Using Novel Aperture-Mounted Surface Recording Head

Tanaka, Kenji ; Ohkubo, Toshifumi ; Oumi, Manabu ; Mitsuoka, Yasuyuki ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Graduate School of Frontier Sciences, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan ; Seiko Instruments Inc., 563 TakatsukaShinden, Matsudo-shi, Chiba 270-2222, Japan

41(3B),1628-1631 (Mar. 2002) CODEN: JAPND

Tanaka, Kenji ; Ohkubo, Toshifumi ; Oumi, Manabu ; Mitsuoka, Yasuyuki ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Recently, near-field surface recording based on near - field optical principles has been vigorously studied for higher data storage density. In near - field optics which utilizes an aperture, in addition to the high spatial resolution property, there is another...

Descriptors: optical storage ; finite difference time-domain analysis ; modelling ; data recording ; near - field scanning optical microscopy ; light polarisation ; surface phenomena ; magneto-optical recording

22/3,K/4 (Item 2 from file: 62)

DIALOG(R)File 62:SPIN(R)

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00957602

Numerical Simulation on Read-Out Characteristics of the Planar Aperture-Mounted Head with a Minute Scatterer

Tanaka, Kenji ; Ohkubo, Toshifumi ; Oumi, Manabu ; Mitsuoka, Yasuyuki ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Graduate School of Frontier Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan ; Seiko Instruments Inc., 563 TakatsukaShinden, Matsudo-shi, Chiba 270-2222, Japan

40(3B),1542-1547 (30 Mar. 2001) CODEN: JAPND

Tanaka, Kenji ; Ohkubo, Toshifumi ; Oumi, Manabu ; Mitsuoka, Yasuyuki ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Recently, various researches on optical recording based on near - field optical principles have been conducted for higher data storage density. However, there is a problem of the trade-off between signal output and spatial resolution, especially when an aperture-type near - field

optical head is utilized for high speed data-readout. In order to solve this problem, we propose a novel near - field optical head, the planar aperture-mounted head with a minute scatterer, and analyze its read-out...

22/3,K/5 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus
(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

05208042 JICST ACCESSION NUMBER: 02A0498496 FILE SEGMENT: JICST-E
Optical Memories. Simulation of Simultaneous Tracking/Data Signal Detection
Using Novel Aperture-Mounted Surface Recording Head.

TANAKA K (1); OHKUBO T (1); HOSAKA H (1); ITAO K (1); OUMI M (2);
MITSUOKA Y (2); NAKAJIMA K (2)

(1) Univ. Tokyo, Tokyo, Jpn; (2) Seiko Instruments Inc., Chiba, Jpn
Jpn J Appl Phys Part 1, 2002, VOL.41,NO.3B, PAGE.1628-1631, FIG.5, REF.10

JOURNAL NUMBER: G0520BAE ISSN NO: 0021-4922

UNIVERSAL DECIMAL CLASSIFICATION: 621.3:681.327.1 535:681.7

LANGUAGE: English COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

; OUMI M (2); MITSUOKA Y (2); NAKAJIMA K (2)

ABSTRACT: Recently, near-field surface recording based on near - field optical principles has been vigorously studied for higher data storage density. In near - field optics which utilizes an aperture, in addition to the high spatial resolution property, there is another...

?

35/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

01588231 INSPEC Abstract Number: A80099823, B80049098
Title: Calibration technique for refracted near-field scanning of optical fibers
Author(s): Young, M.
Author Affiliation: Electromagnetic Technol. Div., US NBS, Boulder, CO, USA
Journal: Applied Optics vol.19, no.15 p.2479-80
Publication Date: 1 Aug. 1980 Country of Publication: USA
CODEN: APOPAI ISSN: 0003-6935
Language: English
Subfile: A B

Title: Calibration technique for refracted near-field scanning of optical fibers
Abstract: The refracted near - field scanning method for determining the refractive-index profile of an optical waveguide was first suggested by Stewart and reduced to practice by him and White (1977, 1979 ...

... 40*, 0.55-NA microscope objective to illuminate the fiber, and a specially constructed, high- aperture condensing lens to focus the emergent cone of rays onto a uniform, large-area silicon detector. Data are taken on an x-y recorder ; the linearity of the electronics has been verified with a set of neutral-density filters...

...Descriptors: optical fibres ;

...Identifiers: optical fibre refracted near field scanning...

...high aperture condensing lens ;

35/3,K/2 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS
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2157649 NTIS Accession Number: DE99707628/XAB
FY 1997 research, and development of fusion domains. Part 3. Studies on next generation optical substrate technologies
Corp. Source Codes: 888888888
Report No.: ETDE/JP-99707628
31 Mar 1998 63p
Languages: Japanese
Journal Announcement: USGRDR0012; NSA0013
Japanese.
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NTIS Prices: PC A05/MF A01

With an objective of realizing super large capacity recording technologies largely exceeding the current limits of optical recording and magnetic recording , studies were conducted on application of near - field optics . In the study on recording by using near - field light , it was verified that a mark with approximately the same size as an aperture diameter can be formed on a phase change recording film when a

fiber probe with an aperture diameter of about 200 nm is used. However, it was found that the recording using this system takes excessive amount of time. When laser light collected on an objective lens was irradiated pulse-wise, a mark with a minimum width of about 20 nm was observed with high contrast. This will mean that a record with recording density of one terabit/in (sup 2) can be read out. Other studies performed include...

... surface shape on near-field read-out, simulation, mechanism of crystallization in a phase change recording film, recording and playback with ultra-high resolution by using a conformable near-field aperture, fabrication of a flat aperture type near-field light probe array, and the evaluation thereon. 22 refs., 27 figs.

Descriptors: Optical Systems; *Optical properties; Recording systems; Probes; Optical fibers; Phase transformations; Laser Radiation; Lenses; Pulse techniques; Optics

35/3,K/3 (Item 1 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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04297497 E.I. No: EIP95122946396
Title: Optical data storage using a solid immersion lens
Author: Terris, Bruce D.; Mamin, H. Jonathan; Rugar, Daniel
Corporate Source: Almaden Research Cent, San Jose, CA, USA
Source: Optoelectronics - Devices and Technologies v 10 n 3 Sep 1995. p 303-310
Publication Year: 1995
CODEN: ODTEEG ISSN: 0912-5434
Language: English

Title: Optical data storage using a solid immersion lens
...Abstract: progress toward achieving high density and high data rate optical recording using a recently developed near-field optical technique based on the Solid Immersion Lens (SIL). The SIL is a truncated glass sphere which serves to increase the numerical aperture of the optical system by n^2 , where n is the index of refraction of the lens material. Using 780 nm light, a 317 nm focused spot size has been achieved by placing the SIL in contact with a sample. By...
Descriptors: Optical data storage; Optical recording; Lenses; Optical systems; Refractive index; Magnetic storage; Magneto-optical devices; Frequencies; Electromagnetic wave diffraction; Optical fibers
Identifiers: Solid immersion lens; High density; Data rate; Near-field optics; Numerical aperture

35/3,K/4 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus
(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

02973668 JICST ACCESSION NUMBER: 96A0430190 FILE SEGMENT: JICST-E
Ultra High Density Optical Memory. Trend of Technology.
GOTO KEN'YA (1)
(1) Tokai Univ. School of High-Technol. Human Welfare
Erekutoronikusu, 1996, VOL.41,NO.5, PAGE.87-91, FIG.3, REF.19
JOURNAL NUMBER: F0037AAL ISSN NO: 0421-3513 CODEN: ERKTA
UNIVERSAL DECIMAL CLASSIFICATION: 621.3:681.327.1 681.327
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary

MEDIA TYPE: Printed Publication

...ABSTRACT: high recording density is a method involving optical technology by applying the principle of the **near field optics**. This paper explains the situation of the research progress and the technical trend. The **near field optical** technology is one of the methods to avoid the phenomenon that light expands by diffraction. The **near field optical** technology includes a method using the evanescent waves to avoid the spot size limitation at...

...DESCRIPTORS: objective lens ; ...

...numerical aperture ; ...

... optical fiber ;

...BROADER DESCRIPTORS: lens (optics...

... lens system

38/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
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7414169 INSPEC Abstract Number: A2002-23-4280T-003, B2002-11-4120-015,
C2002-11-5320K-010

Title: Optical module for a near-field hybrid recording system using the
diffractive optical element (DOE)

Author(s): Jian-Shian Lin; Chi-Feng Chen; Hsi-Fu Shih; Ming-Wen Chang
Author Affiliation: Mater. Ind. Res. Lab., Ind. Technol. Res. Inst.,
Hsinchu, Taiwan

Journal: International Journal of Nonlinear Sciences and Numerical
Simulation Conference Title: Int. J. Nonlinear Sci. Numer. Simul. (UK)
vol.3, no.3-4 p.627-30

Publisher: Freund Publishing House,

Publication Date: 2002 Country of Publication: UK

CODEN: IJNSF5 ISSN: 1565-1339

SICI: 1565-1339(2002)3:3/4L.627:OMNF;1-J

Material Identity Number: D166-2002-003

Conference Title: International Conference on Micro and Nano Systems 2002
(ICMNS 2002)

Conference Date: 11-14 Aug. 2002 Conference Location: Kunming, China

Language: English

Subfile: A B C

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Abstract: This module combines the techniques of MEMS, near - field
optics , flying head, and multiple beam. It organizes the optical
component and waveguide into a substrate. It integrates the multiple beam
optical module for nearfield high density recording , used the optics
characteristic of the diffractive optical element, (DOE), generate multiple
beams equally on the module, and reduce the spot size by using the near
field optics . Simultaneously, quite a bit of information is recorded
on the tracks of high density optical discs.

...Descriptors: optical waveguides

...Identifiers: solid immersion lens ;

38/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

6460361 INSPEC Abstract Number: A2000-03-7847-008

Title: Ultrafast pump-probe spectroscopy with 355-nm lateral resolution at
T=8 K

Author(s): Giessen, H.; Vollmer, M.; Stolz, W.; Ruhle, W.W.

Author Affiliation: Fachbereich Phys., Philipps-Univ., Marburg, Germany

Conference Title: Technical Digest. Summaries of papers presented at the
Quantum Electronics and Laser Science Conference. Postconference Edition
(Cat. No. 99CH37012) p.58-9

Publisher: Opt. Soc. America, Wasington, DC, USA

Publication Date: 1999 Country of Publication: USA 283 pp.

ISBN: 0 7803 5656 X Material Identity Number: XX-1999-02113

Conference Title: Technical Digest. Summaries of papers presented at the
Quantum Electronics and Laser Science Conference

Conference Sponsor: APS/Div. Laser Sci.; IEE/Lasers & Electro-Opt. Soc.;
OSA- Opt. Soc. America

Conference Date: 23-28 May 1999 Conference Location: Baltimore, MD,
USA

Language: English

Subfile: A

Copyright 2000, IEE

...Abstract: from diffusive carrier transport behaviour and coherent lateral excitation transfer triggered the use of scanning **near - field optical** microscopy (SNOM) techniques for such investigations. However, severe technical difficulties, e.g., due to the low light throughput of **optical fibers**, make nonlinear experiments with a few hundred nanometers spatial resolution including broad spectral information very...

... long-working distance high-NA (0.4) microscope objective and a hemispherical GaP solid immersion **lens** with a refractive index of 3.16. The spot diameter is reduced by the refractive...

... pulse duration at the sample was 130 fs and the whole spectral information could be **recorded** with a standard pump-probe setup employing a spectrometer and an optical spectrum analyzer.

...Identifiers: hemispherical GaP solid immersion **lens** ;

38/3,K/3 (Item 1 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

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06255320 E.I. No: EIP03017300462

Title: **Application of planar waveguide for near-field recording with multibeam method**

Author: Chen, Chi-Feng; Lin, Jian-Shian; Shih, Hsi-Fu

Corporate Source: MEMS Dep. Mechanical Industry Research Lab. Industrial Technology Research Inst., Cutung, Hsinchu 310, Taiwan

Conference Title: Optical Fiber and Planar Waveguide Technology II

Conference Location: Shanghai, China Conference Date: 20021016-20021018

E.I. Conference No.: 60488

Source: Proceedings of SPIE - The International Society for Optical Engineering v 4904 2002. p 261-269

Publication Year: 2002

CODEN: PSISDG ISSN: 0277-786X

Language: English

Abstract: This module combined the techniques of MEMS, **near - field optics**, fly head, and multiple beam. It organized the optical component and waveguide into a substrate. It integrated the multiple beam optical module for near-field high density **recording**, used the optics characteristic of the diffractive optical element, (DOE), generate multiple beams equally on the module, and reduce the spot size by using the **near field optics**. Simultaneously, quite a bit of information is **recorded** on the tracks of high density optical discs. 8 Refs.

Descriptors: **Optical waveguides**; **Optical recording**; Microelectromechanical devices; Diffraction gratings; Optical disk storage; Optical instrument **lenses**

?

File 348:EUROPEAN PATENTS 1978-2003/Dec W02

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File 349:PCT FULLTEXT 1979-2002/UB=20031225,UT=20031218

(c) 2003 WIPO/Univentio

? ds

Set	Items	Description
S1	1027	NEAR()FIELD() (LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR - SCAN? ? OR SCANNING) OR NFR
S2	65180	OPTIC?(N) (FIBER? ? OR FIBRE? ? OR WAVEGUID? OR WAVE()GUIDE- ?) OR (CORE AND CLAD)
S3	1664	(MINUTE OR MINIATURE OR MICROSCOPIC OR EXTREMELY() (SMALL OR LITTLE)) (3N) (APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S4	58447	(CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR CONCENTE- R? OR CONCENTRING OR CONCENTRE?) (10N) (LIGHT OR OPTIC? OR LASE- R? ?)
S5	82770	MICROLENS??? OR LENS??? OR MICRO()LENS???
S6	327989	REFLECT? OR MIRROR? OR DEFLECT?
S7	9031	INTERNAL? (3N) (REFLECT? OR MIRROR? OR DEFLECT?)
S8	161	(RECORD? OR REPRODUCT? OR REPLICA? OR DUPLICAT?) (S)S1
S9	0	S1 AND IC=(G02B-006/26 AND G02B-006/42 AND G11B-007/00 AND G11B-007/135)
S10	72	S1 AND IC=(G02B-006/26 OR G02B-006/42 OR G11B-007/00 OR G1- 1B-007/135)
S11	54	S10 AND (S4 OR S5)
S12	30	S11 AND S2
S13	30	IDPAT (sorted in duplicate/non-duplicate order)
S14	30	IDPAT (primary/non-duplicate records only)
S15	30	S14 AND S6
S16	31	S10(S) (S4 OR S5)
S17	12	S16(S)S2
S18	68	S8(S) (S4 OR S5)
S19	23	S18(S)S6
S20	0	S18(S)S7
S21	12	S19(S) (S2 OR S3)
S22	12	IDPAT S21 (sorted in duplicate/non-duplicate order)
S23	6	S22 NOT S17

17/3,K/1 (Item 1 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01474840

Near-field light-generating element, near-field optical recording device,
and near-field optical microscope

Lichterzeugendes Nahfeld-Element, nahfeld-optische Aufzeichnungsvorrichtung
und optisches Nahfeldmikroskop

Element generateur de lumiere en champ proche, appareil d'enregistrement
optique de champ proche et microscope de balayage optique de champ
proche

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1251383 A2 021023 (Basic)

APPLICATION (CC, No, Date): EP 2002252636 020415;

PRIORITY (CC, No, Date): JP 2001118543 010417; JP 200292276 020318

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06; G11B-007/00

ABSTRACT WORD COUNT: 84

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200243	576
SPEC A	(English)	200243	8620
Total word count - document A			9196
Total word count - document B			0
Total word count - documents A + B			9196

...SPECIFICATION 101 to the near-field optical head 104, an optical
waveguide 103 consisting of a core and a clad fixed to a lens 102
and the suspension arm 107 is used. A polarization-maintaining waveguide
having a rectangular core cross section is used as the optical
waveguide 103 to preserve the direction of polarization possessed by the
light fluxes from the laser...is provided with the minute aperture 206.

The microlens 205 collects light fluxes from the optical waveguide 103 into the minute aperture 206. A mirror substrate 210 having a mirror surface 203 and the optical waveguide 103 are fixed on top of the aperture substrate 111. Al (not shown) having a thickness of 200 nm is deposited on the mirror surface 203. The optical waveguide 103 consists of a core 201 and a clad 202. In this embodiment, a glass substrate that transmits light of the wavelength of the...

...may be made of a material that transmits light of wavelength used only for the microlens 205 and a portion where a light flux transmits, by using a silicon substrate or the like. In addition, an ordinary spherical or aspherical lens, refractive index distribution lens, Fresnel lens, or the like can be used as the microlens 205. Especially, where a Fresnel lens is used, a planar lens can be fabricated. If a lens having a large diameter is fabricated, the thickness of the near-field optical head can be reduced. Fresnel lenses can be mass-produced by using photolithography technology.

The present invention is characterized by the...of optical information, a lens 602 placed in front of the light source 601, an optical fiber 603 for propagating light collected by the lens 602 to the near-field optical probe 1000, a prism 611 placed below a specimen 610 and reflecting propagating light produced at the front end of the tip, a lens 614 for collecting the propagating light reflected by the prism 611, and a light detection portion 609 for receiving the collected, propagating light. The optical fiber 603 is a polarization-maintaining fiber for preserving the direction of polarization of the incident...

...emitted from the light source 601 is condensed by the lens 602 and reaches the optical fiber 603. The light propagating through the optical fiber 603 is admitted into the tip 701 of the near-field optical probe 1000 via the lever 702 while the polarization is maintained. The light is directed...

...optical information about the specimen 610 reflected from the prism 611 is collected by the lens 614 and introduced into the light detection portion 609. The signal from the light detection...

...the light emitted from the light source 601 directly onto the tip 701 by a lens and admitting the light without using the optical fiber 603. In the description with reference to Fig. 16, an illumination mode has been described in which light is admitted into the near-field optical probe 1000 and near-field light is directed to the specimen from the minute aperture 705. The near-field optical probe 1000 can also be used in a collection mode in which near-field light produced at the surface of the specimen 610 is detected by the minute aperture 705. In addition, the near-field optical probe 1000 can be used in an observational method in which the illumination mode and...

17/3,K/2 (Item 2 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01445013
Information recording/reproduction apparatus
Informationsaufzeichnungs- / -wiedergabegerat
Appareil d'enregistrement / de reproduction d'informations
PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku,

Chiba-shi, Chiba, (JP), (Applicant designated States: all)

INVENTOR:

Kasama, Nobuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome,
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Shinohara, Yoko, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku
, Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku
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Mitsuoka, Yasuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome,
Mihama-ku, Chiba-shi, Chiba, (JP)
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PATENT (CC, No, Kind, Date): EP 1233410 A2 020821 (Basic)

APPLICATION (CC, No, Date): EP 2002251022 020214;

PRIORITY (CC, No, Date): JP 200140589 010216

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135

ABSTRACT WORD COUNT: 109

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200234	324
SPEC A	(English)	200234	8503
Total word count - document A			8827
Total word count - document B			0
Total word count - documents A + B			8827

...ABSTRACT A2

An information recording/reproduction apparatus including a **near field optical head** (104) having a minute aperture (206) formed thereon, a substantially rod-like **optical waveguide** (103) having a **core** (201) and a **clad** (202), a reflection surface (203) formed at one of end faces of the **optical waveguide**, for irradiating light to the **near field optical head**, a light reception portion and a recording medium, and utilizing **near field light**, a **lens** function (205) is formed on a surface of the **near field optical head** different from the surface of the minute aperture, and a **core** end face is formed at an intermediate part spaced apart from the reflection surface.

...SPECIFICATION aperture becomes low, too.

Therefore, a lens is interposed between the end face of the **optical waveguide** and the minute apparatus so as to condense the luminous flux irradiated from the end face of the **optical waveguide** to a portion in the proximity of the minute aperture, to increase the intensity of **near field light** occurring in the proximity of the minute aperture and to improve light utilization efficiency. When a **lens** having a high NA is used, a condensation spot size can be made small and **optical** energy can be **concentrated** on a finer region. When the minute aperture is disposed

incident into the 'micro - lens' formed in the near field optical head can be increased much more than the diameter in Embodiment 1. Then, the NA of the luminous flux incident from the micro - lens into the minute aperture becomes further greater, and the spot size of the luminous flux...

...energy density condensed to the minute aperture can be further increased, and the strength of near field light generated in the proximity of the minute aperture can be further increased.

Such a shape...information recording/reproduction apparatus has the mechanism in which the distal end portion of the core of the optical waveguide has the lens function of the convex or concave shape. Since this lens function is combined with the lens formed in the near field optical head, the third apparatus can much more condense the luminous flux having a high energy density to the minute aperture of the near field optical head, can further increase the intensity of near field light generated in the proximity of the minute aperture, and can drastically improve light utilization efficiency...

...fourth information recording/reproduction apparatus has the construction in which the reflection surface of the optical waveguide has the concave shape that reflects the luminous flux and much more enlarges its expansion angle, and can...

...more the luminous flux having a high energy density to the minute aperture of the near field optical head. Therefore, since the intensity of near field light generated in the proximity of the minute aperture can be further increased, light utilization efficiency...

...CLAIMS said near field optical head different from the surface of said minute aperture, and a core end face is formed at an intermediate part spaced apart from said reflection surface.

2...

17/3,K/3 (Item 3 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01364947

Method for forming aperture, near field optical head and method for fabricating the same and information recording/reading apparatus
Verfahren zur Herstellung einer Aperturblende, optischer Nahfeldkopf und Verfahren zu dessen Herstellung, Vorrichtung zum Aufnehmen und Wiedergeben von Informationen

Procede de production d'une ouverture, tete optique a champ proche et procede de production associe, appareil d'enregistrement/de reproduction des informations

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1162605 A2 011212 (Basic)
EP 1162605 A3 030402

APPLICATION (CC, No, Date): EP 2001304917 010605;

PRIORITY (CC, No, Date): JP 2000173852 000609; JP 2000371828 001206; JP
2000379266 001213; JP 2001126415 010424

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/00

ABSTRACT WORD COUNT: 166

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English

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CLAIMS A	(English)	200150	754
SPEC A	(English)	200150	12318
Total word count - document A			13072
Total word count - document B			0
Total word count - documents A + B			13072

...SPECIFICATION from a laser 1101 to the near field optical head 1106, a lens 1102, an optical fiber 1103 fixed to the suspension arm 1109, a lens 1104 and a mirror 1105 are used.

The optical fiber 1103 is used here but...

...1101 is entered to the near field optical head 1106 by the lens 1102, the optical fiber 1103, the lens 1104 and the mirror 1105, which form a light guiding structure. Then, it is guided to the aperture of the near field optical head 1106 to generate a near field light near the aperture. The scattered light generated from the consequence of the interaction of this near field light with the recording medium 1107 is received by the light receiving head 1108 fixed to...

...of information. Furthermore, recording information on the recording medium 1107 is realized in which the near field optical head 1106 having the aperture is moved to a desired position on the recording medium as the recording medium 1107 is brought close to the aperture and the near field light is irradiated onto the recording medium 1107 from the aperture for writing operation.

In the...

17/3,K/4 (Item 4 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

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01344148

Information recording and reproducing apparatus
Informationsaufzeichnungs- und -wiedergabevorrichtung
Appareil d'enregistrement et de reproduction d'information
PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1148477 A2 011024 (Basic)
EP 1148477 A3 021211

APPLICATION (CC, No, Date): EP 2001303351 010410;

PRIORITY (CC, No, Date): JP 2000116580 000418

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-007/22

ABSTRACT WORD COUNT: 209

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

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CLAIMS A	(English)	200143	409
SPEC A	(English)	200143	9508
Total word count - document A			9917
Total word count - document B			0
Total word count - documents A + B			9917

...SPECIFICATION the above-described effect, the optical propagating
portion is constituted by the lens and the optical waveguide for
propagating the light flux to the optical connecting portion and
accordingly, the optical propagating...

...out. Further, it is possible to overlap the record media and arrange
suspension arms and near - field light heads in correspondence with
the respective record media and large capacity formation can be realized
...to a vicinity of the flexure 110 is constituted by a lens 102 and an
optical fiber 103 fixed to the suspension arm 109. An optical
connecting portion for optically connecting the light propagating portion
and the near - field light head 106 having the optical coupling
portion is constituted by a lens 104 and a mirror 105.

Here, although the optical fiber 103 is used, an optical...the prism
302 is fixed to the flexure 110.

Diverging light flux emitted from the optical fiber 103 is
converted into parallel light flux by the lens 104 and a direction of...

...is reflected by the bottom face of the prism. At this occasion, there is

constituted by the lens and the optical waveguide for propagating the light flux to the optical connecting portion and accordingly, the optical propagating...

...out. Further, it is possible to overlap the record media and arrange suspension arms and near - field light heads in correspondence with the respective record media and large capacity formation can be realized ...

17/3,K/5 (Item 5 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01270944

NEAR FIELD OPTICAL HEAD AND METHOD FOR MANUFACTURING THE SAME
OPTISCHER NAHFELDKOPF UND VERFAHREN ZU DESSEN HERSTELLUNG
TETE OPTIQUE A CHAMP PROCHE ET PROCEDE DE FABRICATION DE CELLE-CI
PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1122722 . A1 010808 (Basic)
WO 200115151 010301

APPLICATION (CC, No, Date): EP 2000953551 000821; WO 2000JP5605 000821

PRIORITY (CC, No, Date): JP 99238062 990825; JP 99336062 991126

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-021/21;
G01N-013/14; G12B-021/06; G02B-006/26

ABSTRACT WORD COUNT: 175

NOTE:

Figure number on first page: 001A001B

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200132	997
SPEC A	(English)	200132	12254
Total word count - document A			13251
Total word count - document B			0
Total word count - documents A + B			13251

...SPECIFICATION method characterized in that the method includes a machining process of the tip of the optical fiber in a lens shape for concentrating the emitted light from the optical fiber onto the minute structure.

Therefore, the spot diameter of the emitted light from the optical... lies in the geometry of the mirror 2002. The mirror 2002 is consisted of a concave mirror. The light emitted from the optical fiber 2803 by the mirror 2002 is changed in its propagating direction toward the minute aperture...

...at the same time is concentrated on the minute aperture 2006. Therefore, according to the near - field optical head 2000, the near - field light emitted from the minute aperture 2006 has a greater intensity than that of the near - field optical head shown in the first embodiment.

(Third Embodiment)

Fig. 6 is a construction view showing...

...optical fiber 3803 of the present invention is processed in a spherical shape.

Accordingly, the light emitted from the tip of the optical fiber propagates while concentrating itself toward the minute aperture 3006. Therefore, as for the near - field optical head 3000, the near - field light generated from the minute aperture 3006 has a greater intensity than the near - field optical head shown in the first embodiment.

(Fourth Embodiment)

Fig. 7 is a construction view showing...

...CLAIMS process of a reflection coating on the diagonally shaped surface.

21. A method for manufacturing near - field optical head of any of claims 16 to 17 or 19 to 20, wherein the method includes a machining process of the tip of the optical fiber in a lens shape to condense the emitted light from the optical fiber onto the minute structure.
22. A near-field optical head comprising:
a light propagating medium...

17/3,K/6 (Item 6 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01264898

Recording medium, recording apparatus and recording method

Aufzeichnungsmedium -vorrichtung und -verfahren

Support , appareil et methode d'enregistrement

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PATENT (CC, No, Kind, Date): EP 1091355 A2 010411 (Basic)
EP 1091355 A3 030507
APPLICATION (CC, No, Date): EP 2000308015 000914;
PRIORITY (CC, No, Date): JP 99277456 990929
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-009/04; G11B-007/00; G11B-009/08;
G11B-011/08
ABSTRACT WORD COUNT: 109
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Figure number on first page: 1

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FULLTEXT AVAILABILITY:

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CLAIMS A	(English)	200115	965
SPEC A	(English)	200115	12732
Total word count - document A			13697
Total word count - document B			0
Total word count - documents A + B			13697

...SPECIFICATION medium 10 and the recording head 22.

As described above, the opening 27 of the **optical fiber** 24 has a very small size in this embodiment, and the recording medium 10 is irradiated with a **near field light** through the opening 27. The **near field light** is the light that is localized on only the surface of a substance when the substance is irradiated with the light. In other words, the **near field light** represents the electric line of force between induced dipoles adjacent to each other in the...

...a substance when the substance is irradiated with light. In the case of using the **near field light**, it is possible to make the light irradiated spot very small. The method of generating the **near field light**, which is not particularly limited in the present invention, includes, for example, the method of...

...very small opening as in the embodiment described above, the method using a solid immersion **lens**, the method utilizing a phase change material, in which the refractive index is non-linearly...

17/3,K/7 (Item 7 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01109076

NEAR-FIELD OPTICAL HEAD

OPTISCHE NAHFELDKOPF

TETE OPTIQUE EN CHAMP PROCHE

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PATENT (CC, No, Kind, Date): EP 996122 A1 000426 (Basic)
WO 9959149 991118

APPLICATION (CC, No, Date): EP 99918343 990507; WO 99JP2393 990507

PRIORITY (CC, No, Date): JP 98127569 980511; JP 9984291 990326

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135

ABSTRACT WORD COUNT: 134

NOTE:

Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
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CLAIMS A	(English)	200017	394
SPEC A	(English)	200017	5441
Total word count - document A			5835
Total word count - document B			0
Total word count - documents A + B			5835

...SPECIFICATION Embodiment 1)

Fig. 7 shows a structure of an information recording/reproducing apparatus using a **near - field optical** head according to Embodiment 1 of the present invention. This information reproducing apparatus 20 is plates 22 and 23 for controlling a polarization of a laser light, an **optical waveguide** 24 for transmitting through the laser light, an optical head 1 having a microscopic aperture, an **optical** head drive actuator 30, a **lens** 29 for **focusing** a scattering light caused due to interaction between a **near - field light** 7 and a recording medium 33, a light detecting element 25 for receiving a scattering...

...by the wavelength plates 22, 23, and introduced to the optical head 1 through the **optical waveguide** 24.

As will be stated later in Fig. 1, a near-field light 7 caused...

17/3,K/8 (Item 8 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

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01095778

RECORDING APPARATUS

AUFZEICHNUNGSGERAT

APPAREIL D'ENREGISTREMENT

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PATENT (CC, No, Kind, Date): EP 984438 A1 000308 (Basic)
WO 9949459 990930
APPLICATION (CC, No, Date): EP 99942599 990312; WO 99JP1212 990312
PRIORITY (CC, No, Date): JP 9872786 980320; JP 98291142 981013; JP 98302266
981023; JP 9916202 990125
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G11B-007/09; G11B-007/135; G01N-037/00
ABSTRACT WORD COUNT: 135
NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
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CLAIMS A	(English)	200010	2057
SPEC A	(English)	200010	16879
Total word count - document A			18936
Total word count - document B			0
Total word count - documents A + B			18936

...SPECIFICATION Z-axis control mechanism 14.

When the microscopic aperture 12 is inserted in the localized near - field light region on the recording medium 10, the near - field light is scattered by the microscopic aperture 12. The scattered light (propagation light) is introduced through the microscopic aperture 12 to a focusing optical system 15 placed above the microscopic aperture 12. Thus, detection of near - field light is achieved in a collection mode as stated before. The propagation light introduced to the focusing optical system 15 is introduced through a mirror 16 to a light detecting mechanism 17 and converted into an electric signal to be processed into a reproduced signal. Here, the focusing optical system 15 is, for example, a lens optical system, optical fiber optical system or light guide or the like. Also, the light detecting mechanism 17 is, for...being absorbed by the silicon substrate. Input light 232 introduced through a lens system or optical waveguide (not shown) produces near - field light 205 from a microscopic aperture 235 formed at a tip of the probe. The scattering...

...234 is detected by the light receiving element 233. Because the z direction dependency of near - field light is theoretically the same as that of Embodiment 3, the probe can be controlled in...

17/3,K/9 (Item 9 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01085672

NEAR FIELD OPTICAL MEMORY HEAD

OPTISCHER NAHFELDKOPF FÜR SPEICHER

TÊTE DE MÉMOIRE OPTIQUE DANS LE CHAMP PROCHE

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PATENT (CC, No, Kind, Date): EP 978829 A1 000209 (Basic)
WO 9944198 990902

APPLICATION (CC, No, Date): EP 99905268 990222; WO 99JP781 990222

PRIORITY (CC, No, Date): JP 9843715 980225; JP 9843718 980225; JP 994548
990111; JP 996802 990113

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135

ABSTRACT WORD COUNT: 126

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

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CLAIMS A	(English)	200006	1307
SPEC A	(English)	200006	10938
Total word count - document A			12245
Total word count - document B			0
Total word count - documents A + B			12245

...SPECIFICATION near-field light and a fine structure of a surface of the sample to an optical detector by using a focusing system added further.

Further, near - field light is not only utilized for a microscope but is applicable to high density optical memory record in which near - field light having a high energy density is generated at a very small aperture of an optical fiber probe by introducing light having a comparatively large intensity to a sample via an optical fiber probe and a structure or physical properties of a surface of the sample are locally changed by the near - field light .

As a probe used in a near-field optical microscope, for example, as disclosed in...

...suitable for reproduction and recording of an optical memory utilizing near-field light.

However, the optical fiber probe is provided with the sharpened front end and accordingly, the mechanical strength is not...

...is not suitable for mass production and array formation. Further, scattered light provided by disturbing near - field light is very weak and therefore, when the scattered light is detected by passing through an optical fiber, there is needed a device for providing a sufficient light amount at a detecting unit. Further, when a sufficient magnitude of near - field light is generated by passing through an optical fiber, there is needed a device for focusing light to a very small aperture portion of the optical fiber.

Further, according to the cantilever type optical probe, reception of scattered light from the light...

17/3,K/10 (Item 10 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01002278

OPTICAL RECORDING DEVICE AND OPTICAL RECORDING MEDIUM

OPTISCHES AUFZEICHNUNGSGERAT UND OPTISCHES AUFZEICHNUNGSMEDIUM

DISPOSITIF D'ENREGISTREMENT OPTIQUE ET SUPPORT D'ENREGISTREMENT OPTIQUE

PATENT ASSIGNEE:

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LEGAL REPRESENTATIVE:

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PATENT (CC, No, Kind, Date): EP 977192 A1 000202 (Basic)
WO 9847138 981022

APPLICATION (CC, No, Date): EP 98912778 980413; WO 98JP1683 980413

PRIORITY (CC, No, Date): JP 9795856 970414; JP 9795858 970414

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135; G11B-007/24

ABSTRACT WORD COUNT: 167

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200005	1326
SPEC A	(English)	200005	7734
Total word count - document A			9060
Total word count - document B			0
Total word count - documents A + B			9060

...SPECIFICATION objective lens having a high numerical aperture such as a solid immersion lens or stigmatic focusing solid immersion lens or by an optical waveguide having a minute aperture kept in contact with or closely spaced from a recording medium...

...between the surface of the optical recording medium and the light emitting face of the lens or optical waveguide is very small (not larger than 1/2 of the light wavelength, typically less than...

17/3,K/11 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00801865 **Image available**

NEAR-FIELD CRYSTAL OPTICAL MEMORY

MEMOIRE OPTIQUE A QUARTZ DE CHAMP PROCHE

Patent Applicant/Assignee:

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except: US)

Patent Applicant/Inventor:

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200135398 A1 20010517 (WO 0135398)

Application: WO 2000US30802 20001110 (PCT/WO US0030802)

Priority Application: US 99164574 19991110

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ

DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ

LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG

SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 4498

Fulltext Availability:

Detailed Description

Detailed Description

... near field system uses laser light to read and write data. However, rather than using lens to focus the laser beam on the recording medium, the light is directed into a probe made from aluminum-coated optical fiber, tapered to a tiny point at the end as illustrated in FIG. 2. In FIG. 2, the tapered tip 30 of the optical fiber is shown in shown in relation to the recording medium 40.

The diameter of the...

17/3,K/12 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2003 WIPO/Univentio. All rts. reserv.

00373324 **Image available**

HIGH RESOLUTION FIBER OPTIC PROBE FOR NEAR FIELD OPTICAL MICROSCOPY

SONDE HAUTE RESOLUTION A FIBRE OPTIQUE POUR MISCROSCOPIE OPTIQUE A CHAMP
PROCHE

Patent Applicant/Assignee:

ACCUPHOTONICS INC,

Inventor(s):

ISLAM Mohammed N,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9714067 A1 19970417

Application: WO 96US16080 19961011 (PCT/WO US9616080)

Priority Application: US 95542437 19951012

Designated States: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 11247

Fulltext Availability:

Detailed Description

Detailed Description

... extremely high

resolution;

Figure 7 is a schematic diagram illustrating one

configuration for fabricating the **fiber optic** probe;

Figure 8 is a series of views illustrating an alternate

etching process, the views illustrating the **fiber optic** probe tip

undergoing etching at different successive time intervals;

Figure 9 is a detailed view...

...Preferred Embodiment

Referring to Figure 1. the high efficiency optical probe is

illustrated in a **near field optical** microscopy application, The
optical probe 10 is formed at the distal end of a **fiber optic** cable
12

which is in turn coupled at its proximal end to a light source 14, The
optical probe is a **light** -emitting probe which projects a highly
concentrated , extremely **focused** near field illumination onto a
specimen

16, which may be mechanically positioned on a suitable...

...from the specimen or light transmitted through

the specimen, The objective 18 may be a **lens** coupled to a
photomultiplier 20, which may in turn be electronically connected to a
monitor...

?

23/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01346862

Near-field optical head
Optischer Nahfeldkopf
Tete optique a champ proche

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1150286 A2 011031 (Basic)
EP 1150286 A3 020918

APPLICATION (CC, No, Date): EP 2001303370 010410;

PRIORITY (CC, No, Date): JP 2000119753 000420

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G11B-007/12

ABSTRACT WORD COUNT: 143

NOTE:

Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; English
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CLAIMS A	(English)	200144	698
SPEC A	(English)	200144	7515
Total word count - document A			8213
Total word count - document B			0
Total word count - documents A + B			8213

...ABSTRACT A2

A near - field optical head capable of rapid recording and/or reproducing of the information is provided. The near - field optical head condenses the light from the light source and irradiates the light on the minute opening 1. Then, by means of detecting the reflected light from the light condensing mark 501 provided on the circumference of the minute opening 1, the relative position between the light condensing point condensed by the lens and the light condensing mark 501 is detected so that the light condensing point is controlled to follow the light condensing mark 501. Thus, intensive and constant near

four-piece photo detector 103. Consequently, the information recorded with high-density can be reproduced even by small number of the components.

An outline...light condensing point is controlled to follow the light condensing mark by means of the lens movement by the lens actuator or by means of the beam deflecting means so that the light of high energy density is irradiated on the light condensing mark at all times. Therefore, intensive and constant near - field light can be generated in the minute opening at all times so that rapid recording and/or reproducing of the information can be realized using the near - field optical head. In addition, as the light condensing point is controlled to follow the light condensing...

...similar function can be realized even though the manufacture or the assembly accuracy of the near - field optical head may be comparatively low. Therefore, cheap near - field optical head can be provided.

Further, according to the near-field optical head related to the...

23/3,K/2 (Item 2 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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01335236

Process of producing near-field light generating element
Verfahren zur Herstellung lichtzeugender Nahfeld-Elemente
Procede de production d'elements generateurs de lumiere en champ proche
PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 1139121 A2 011004 (Basic)
EP 1139121 A3 031210

APPLICATION (CC, No, Date): EP 2001301662 010223;

PRIORITY (CC, No, Date): JP 200062407 000307

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G02B-003/00; G12B-021/02; G12B-021/06;
G11B-007/22

ABSTRACT WORD COUNT: 118

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200140	463
SPEC A	(English)	200140	12265
Total word count - document A			12728
Total word count - document B			0
Total word count - documents A + B			12728

...SPECIFICATION be omitted.

After being thus prepared, the two substrates are fixed so that the plane **micro lens** 303 is sandwiched there between as shown in FIG.3. As a result, luminous flux fed to the **optical waveguide** on the **optical waveguide** substrate 301 is diffused from the outgoing end of the **optical waveguide** and **reflected** on the incline on the **optical waveguide** substrate 301. After that, the luminous flux condensed at the micro-aperture by transmitting through the plane **micro lens** 303. Thus, **near - field light** is formed adjacent to the micro-aperture. When a storage medium or a sample is...

...by virtue of interaction among the micro-aperture the storage medium and the Sample, the **near - field light** is converted into propagation light. By receiving the propagation light with a light-receiving element ...

...medium, or to observe optical characteristic of the surface of the sample. Further, as for **recording** onto a storage medium, it is provided by positioning a storage medium and the micro-aperture close to each other, move the **near - field light** generating element that has the micro-aperture at a desired position on the storage medium, and by irradiating the **near - field light** from the micro-aperture onto the storage medium to **record** information.

The embodiment of the invention described hereinbefore is for a case where the convex...

23/3,K/3 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00989247 **Image available**

OPTICAL TRANSMISSION APPARATUS WITH DIRECTIONALITY AND DIVERGENCE CONTROL
APPAREIL DE TRANSMISSION OPTIQUE AVEC COMMANDE DE LA DIRECTIVITE ET DE LA DIVERGENCE

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200319245 A2-A3 20030306 (WO 0319245)
Application: WO 2002EP11047 20020830 (PCT/WO EP0211047)
Priority Application: US 2001316247 20010831

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU
CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO
RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 14085

Fulltext Availability:

Claims

Claim

... described above, is preferably mounted to a support 72, such as a substrate or an **optical fiber**. Dashed line N represents a line normal to the surface of optical filter 70, and...different light collecting devices 82. The light collecting devices can be (but limited to being) **optical fibers**, lenses, mirrors and light detectors. The period P,, of surface features 40' of the first...exit of a small aperture is made efficient.

Another application for the invention is in **near - field scanning optical microscopy ("NSOM")**. Fig. 15 shows an embodiment of the **near - field scanning optical microscope probe** of the present invention, in which the probe acts as a light...small optical divergence provided by the surface topography on the second surface (output surface) which **focuses the transmitted light** on the specimen.

Another application for the invention is in bright subwavelength light sources. Fig...the end of a waveguide I I I such as (but not limited to) an **optical fiber**. The light couples with the periodic array of surface features 40' on the first surface...data which is extremely difficult if not impossible to achieve by conventional optics consisting of **lenses**. If a subwavelength aperture is used to limit the size of the optical beam it...as the read/write head moves across the optical storage media.

This would require complex **lenses** and alignment devices to achieve and therefore is not considered a practical solution to the...light collecting devices 203. The light collecting devices can be (but not limited to being) **optical fibers**, **lenses**, **mirrors** and light detectors. For illustrative purposes only two collecting devices are shown in

23/3,K/4 (Item 2 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00785032 **Image available**

RADAR APPARATUS FOR IMAGING AND/OR SPECTROMETRIC ANALYSIS AND METHODS OF PERFORMING IMAGING AND/OR SPECTROMETRIC ANALYSIS OF A SUBSTANCE FOR DIMENSIONAL MEASUREMENT, IDENTIFICATION AND PRECISION RADAR MAPPING
RADAR D'IMAGERIE ET/OU D'ANALYSE SPECTROMETRIQUE, PROCEDES D'EXECUTION D'IMAGERIE ET/OU D'ANALYSE SPECTROMETRIQUE D'UNE SUBSTANCE, AUX FINS DE MESURE, IDENTIFICATION ET CARTOGRAPHIE RADAR DE PRECISION

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200118533 A1 20010315 (WO 0118533)

Application: WO 2000GB3431 20000907 (PCT/WO GB0003431)

Priority Application: GB 9921042 19990907

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DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ

LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG

SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 15805

Fulltext Availability:

Claims

Claim

- ... contact each other in the transillumination configuration. For a required internal chamber volume, the dielectric **lenses** 9a, 9b are selected to optimise the convergence/divergence of radiation emitted by the antenna...
- ...the selected dielectric material, such as distilled water in this example, to make a dielectrically **clad** bistatic antenna pair. The above configuration enables an optimum impedance match to be obtained at...
- ...The radiation emitted by the transmitting antenna 8a is focused by means of the wax **lens** 9a so that the sample 10 placed in the lower portion of the chamber 4a is irradiated. Each wax **lens** 9a, 9b in this embodiment extends 4mm into the base of the chamber portions 4a...
- ...filled with a suitable dielectric, for example, air. The radiation is refocussed by the wax **lens** 9b into the receiving antenna assembly 2 where it is detected by the receiving antenna...
- ...MHz to 200 MHz. A large enough time window is employed to ensure that sufficient **reflections** have occurred within the telescopes 2, 3 and the chamber 4. For example, a time...angle to one another on one side of the object etc under examination, with a **reflector** placed behind the object so that the signal from the Tx antenna passes through the object and is **reflected** back to the receiver by the **reflector**. As shown in Fig. 7D, the assemblies are co-axially aligned to face one another...
- ...either side of the belt to transilluminate baggage as it moves along the belt. Metallic **reflectors** may be further provided below the belt and around the sides/roof of any surrounding...

classified.

1 8

The images may also be suitably scaled by software,
with...

...the transmit pulse to allow true
conformal mapping of object shapes. For example,
conventional GPR **reflections** from circular or
elliptical section structures such as pipes occur as
parabolic echoes from the top and bottom of the pipe
reflecting surfaces, whereas mapping in the manner
described above will display the structures in their
true...Fig. 12) is
preferably selected.
Modes A1 to A5 are intended for close range or **near**
field imaging and typecasting such as in medical and
biological applications. The recommended frequency
ranges for these...

...the rate at
is which pulses are emitted from the transmitter. For
close range (focussed **near field imaging**) medical and
biological applications, PRF should be at least 64 kHz
for combined imaging and...

23/3,K/5 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00753866 **Image available**

OPTICAL STORAGE SYSTEM WITH HEAD CLEANING MECHANISM
SYSTEME DE MEMOIRE OPTIQUE AVEC MECANISME DE NETTOYAGE DE TETE

Patent Applicant/Assignee:

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200067252 A1 20001109 (WO 0067252)
Application: WO 2000US12509 20000504 (PCT/WO US0012509)
Priority Application: US 99304527 19990504

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(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Filing Language: English

Fulltext Word Count: 10969

Fulltext Availability:

Detailed Description

Detailed Description

... storage systems with
other types of near-field optical elements rather than a
near-field **lens** with a flat interfacing surface. For
example, the optical head may use a solid immersion **mirror** ,
a tapered **optical fiber** near-field **recording** head, or a

high-index slider with a diffractive optical element (e.g.,
a diffractive lens) on a high-index transparent slider.

See, Lee et al., "'Feasibility study on near field...

23/3,K/6 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00548297 **Image available**
HEATED HEAD FOR DATA STORAGE SYSTEMS
TETE CHAUFFEE POUR SYSTEME DE STOCKAGE DE DONNEES
Patent Applicant/Assignee:

TERASTOR CORPORATION,
NOVOTNY Vlad,
DIEPERSLOOT David,
HAJJAR Roger,
BELL Bernard W Jr,

Inventor(s):

NOVOTNY Vlad,
DIEPERSLOOT David,
HAJJAR Roger,
BELL Bernard W Jr,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200011670 A1 20000302 (WO 0011670)
Application: WO 99US19198 19990820 (PCT/WO US9919198)
Priority Application: US 9897548 19980821; US 99227778 19990108

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ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT
LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT
UA UG US US UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ
MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ
CF CG CI CM GA GN GW ML MR NE SN TD TG

Publication Language: English

Fulltext Word Count: 11803

Fulltext Availability:

Detailed Description

Detailed Description

... types of near-field

lenses or other near-field optical elements, including, a
near-field lens formed of a radially graded index rod, a
solid immersion mirror, a tapered optical fiber near
25 field recording head, or a high-index slider with a
diffractive optical element (e.g., a diffractive lens) on
a high-index transparent slider. See, Lee et al.,
"Feasibility study on near field optical memory using a
catadioptric optical system," Optical Data Storage, 1998
30 Technical Digest Series, Vol...

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